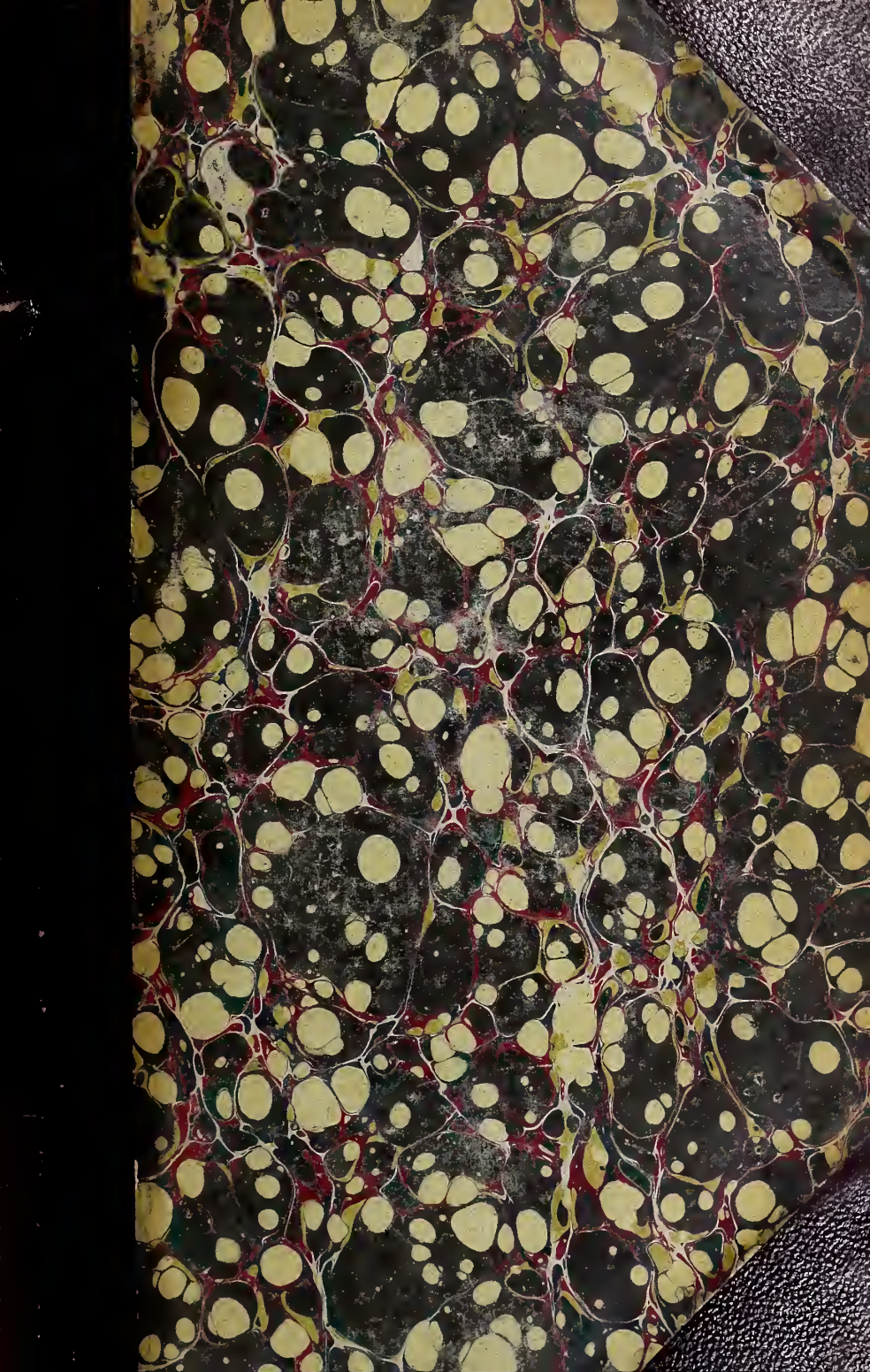

JOURNAL

OF

THE ASIATIC SOCIETY.

No. 50.—February, 1836.

I.—*Account of Rumbówe, one of the States in the Interior of Malacca. By Lieut.* J. F. Newbold, *23rd Regt. Madras Native Infantry.*

Rumbówe has generally been accounted by the Portuguese and Dutch Governments at Malacca as the principal of the states in the interior; but their ideas, like our own, until of late years, of the relative situation of these states, both political and geograpical, appear to have been very erroneous. At the present time, indeed, much interesting matter remains in obscurity, and must remain until the peninsula has been more thoroughly explored.

These notions of the superiority of *Rumbówe* over the sister state arose probably from the circumstances of its proximity to, and early connexion with, *Naning;* and from that of its capital being the crowning place of the deputed sovereign from *Menangkábówe.*

Tradition ascribes its name to a large *Marabówe* tree, anciently growing near its western frontier, on one of the banks of the *Marabówe* stream, not far from its embouchement into the *Rumbówe* branch of the Lingie river.

There was a small hamlet here, when I visited the place in 1832, consisting of four or five Malay houses. The word *Marabówe* is supposed to have been corrupted into *Rumbówe.*

The area of *Rumbówe proper,* not including the dependencies, is said not to be quite so spacious as that of *Naning.* The nearest point of its frontier is distant about 25 miles N. W. from the town of Malacca.

Boundaries.—It is bounded towards the N. E. by *Sríminánti* and *Súngie Ujong;* towards the south, by part of *Naning* and *Johóle;* to the west, by part of *Naning* and *Salengore,* and to the east, by part of *Sríminántí* and *Johóle.*

The boundary marks with *Sríminánti* are the mountains of *Lépat*, *Cájang*, and *Gúnong tújoh;* with *Súngie Ujong*, *Búkit Augim*, part of the right branch of the *Lingie* river, and *Parentian tingih* ; with *Naning*;* with *Johóle*, the hill of *Búkit Púbeť;* and with *Salangore*, the *Lingie* river.

Rumbówe contains two divisions, viz. *Rumbówe Ulú* and *Rumbówe Ilír;* each under its four *Súkús*, who are all subject to the control of one *Panghúlú*.

The *Lingie* river forms the channel of communication, by water, of *Rumbówe* with the straits of Malacca, into which it falls about eight miles to the eastward of *Cape Rachádo*. This river is about 450 yards broad, and takes a north-by-easterly course into the interior, to the distance of about six miles, when it divides into two branches. The one to the left, called *Battang Pennar*, goes up to *Lingie*, and the *Súngie Ujong* tin mines, taking a N. W. by N. course; and the one to the right, called *Battang Penágie*, takes a N. E. by E. course, to *Bander*, in *Rumbówe*. It has its rise among the mountains of this state. The three principal posts of *Rumbówe* are situated on the banks of *Battang Penágie;* viz. *Sempong*, six miles from the mouth at the point of the river's bifurcation; *Padás*, on the right bank, five or six miles further up; and *Bander*, about eight miles beyond *Padás*.

The river, up to *Sempong*, is navigable for vessels of 125 tons, ranging from $3\frac{1}{2}$ to 7 fathoms, high-water, and vessels of nine tons may pass up, without much difficulty, to *Padás;* and to *Lingie*, on the other branch.

In entering the mouth of the river care must be taken to avoid the eastern bank, in consequence of hidden rocks, which run off to sea. The channel near the western bank is deep and safe.

Regarding *Padás*, the following remarks are extracted from some notes taken during a trip up the river in 1833. Two or three miles in advance of *Ramoan China Kechil*, on the right bank of the river, on the summit of a small hill commanding it, is *Rája* Ali's (the *Iang de pertúan Besár*) stockaded house. The place is named *Padás*, from a small stream that flows into the river about a quarter of a mile nearer *Sempong*. The river, several hundred yards above and below *Padás*, had been partially blocked up by large trees felled completely across. In one place we passed through a formidable chevaux de frise of pointed stakes, bound together, and running from bank to bank.

On this part of the river the stockade bears most: it is most judiciously placed to annoy an enemy passing up with so many obstacles in his course. We contrived to get over them with consi-

* See paper on Naning, vol. IV. 297.

derable difficulty, although the trees had since been cut in two, and broken down. At high-water, they might however be readily passed. The river was blockaded in this fashion during the *Naning* disturbances, and the engineer on this occasion was no other than our friend in the boat, the *Laks-amána* of *Rumbówe*. *Sempong*, as before stated, is situated at the point of the river's bifurcation. In 1833, it consisted only of two or three huts; in the foremost of which was a small battery, consisting of seven swivels, and an iron 3-pr. of sufficient range to command both branches of the river. It is the place selected by the *Rumbówe* chiefs to levy the duty on the tin passing down from *Súngie Ujong*.

At the close of 1833, and commencement of 1834, many fugitives settled here, in consequence of the disturbances at *Lingie*, together with a small colony from Sumatra, under a *Panglíma* named *Kammer*. The place is now strongly stockaded by the *Iang de pertúan Múda* Sayad Saban, by whom every encouragement is held out to settlers.

Population.—Rumbówe, including *Kroh* and *Tamping*, contains about 9,000 inhabitants. The principal places are *Bander*, *Sempong*, *Chembong*, *Kaling*, and *Battu Ampar*. *Chembong*, with its environs, is said to contain about 600 houses, and drives a petty trade in timber, dammer, and wax, which are bartered for opium, cloths, iron utensils, and tobacco.

Chembong is the residence of the *Panghúlú* of *Rumbówe*; *Bander*, *Padás*, and *Sempong* those of the *Iang de pertúans*.

Besides Malays are several aboriginal tribes inhabiting the steeps of the mountains, and the forests, who subsist principally by hunting. The natives give them the general appellation of *Orang Benúa*, people of the soil or country.

They are subdivided into several tribes: among the most remarkable of which are the *Udái*, *Sakkye*, *Jakún*, and *Rayet Utan*. I have seen several specimens of the two last, but do not perceive any material dissimilarity between them, save that the latter, by enjoying freer intercourse with the Malays, have become more civilized; at least, as far as a shew of dress and ornaments is implicated.

They differ much from the descriptions given of the *Semang* in the interior of *Quedah*, and the thick-lipped, woolly-haired *Papúan*. Their features are of the Malay caste; their hair sometimes straight, like that of the generality of Asiatics, but more frequently curling; at the same time, very different from the frizzly locks of the African.

Their stature is shorter, but they do not differ much in complexion from the Malay.

The Malays entertain a high estimation of the skill of those singular tribes in medicine, and the knowledge of the virtues of herbs, roots,

plants, &c. investing their sages, *Púyongs*, even with supernatural powers, such as the *Túyoh Besawye*, &c.

These tribes are to be found over the whole of the interior of this part of the peninsula, particularly in *Ulú Colang*, *Súngie Ujong*, *Johóle*, *Jompóle*, *Jellabu*, *Ulú Máar*, and *Segámet*. They are skilled in the composition of the celebrated upas poison, with which they tip the points of their arrows. The *Súmpitan*, a long tube, through which the poisoned darts are blown, and a spear, are their favorite weapons. The cloth that encircles their loins is made from the fibrous bark of the *Terrap* tree.

The influence of their *Botins*, or chiefs over the election of the *Panghúlú* of *Súngie Ujong*, has been mentioned. In *Johóle*, they exert a similar power. It may be also remarked here, that in *Rumbówe* there are two distinctions of the high Malayan tribe called *Bódoánda*, viz. *Bódoánda Jakún*, and *Bódoánda Jawa*. The *Panghúlús* of all these states must necessarily be of one of these two tribes.

Government.—Rumbówe was formerly under the immediate sway of its *Panghúlú* and *Ampat Súkú;* but of latter days, the *Iang de pertúan Múda* claims equal, if not superior power to the *Panghúlú*.

The first chief who assumed the title of *Iang de pertúan Múda* of *Rumbówe* was *Rája* Assil, the son of the second *Menangkábówe* prince *Rája* Adil; he was appointed by the then *Iang de pertúan Besár* (his son-in-law *Rája* Itam), with the concurrence of the *Panghúlús* of the four states; and it is stated, had assigned to him, as a subsistence, two-sixths of the duty levied on the tin passing down the river from *Súngie Ujong*, (the duty was then 2 dls. per *bhar*,) and the revenues of the districts of *Kroh* and *Tampin*, near the foot of the mountain of that name.

In 1812, Assil was driven out of *Rumbówe*, as previously mentioned, by the *Panghúlú* and *Súkús*, assisted by Rája Ali; and died in Naning in 1814 or 15. Rája Ali supplanted him; but, being elected as *Iang de-pertúan Besár* in 1832, was succeeded in the *Múda*-ship by his son-in-law, the present chief, Sayad Saban.

This office being an innovation on ancient usage is, consequently, secretly disliked by the Malays, especially where its privileges are so ill defined and unsettled; and one in which right would appear synonymous with might.

Another change within the last few years has taken place in the constitution of this state; instead of the council of the *Ampat*, or four, *Súkús*, it consists now of eight, or the *Súkú Iang de-lápan;* who, with the *Panghúlú*, now form a deliberative body, like the Archons of Athens, of nine.

The *Panghúlú* is alternately elected from the two tribes, *Bódoánda Jakún* and *Bódoánda Jawa*. The following circumstances, according to tradition, led to this custom:

"When the king of *Johore* appointed nine *Panghúlús* over the nine *Negris* in the interior of Malacca, the heads of the leading tribes in *Rumbówe*, viz. those of the *Bódoánda Jakún* and *Jawa*, disputed regarding the superiority of their respective claims to the honor. His Highness of Johore, after due deliberation, came to the decision that the selection of a *Panghúlú* should not be made from one tribe exclusively, but that each should have the privilege alternately."

This judgment, we are assured, gave entire satisfaction, and at all events, seems to have been adhered to in subsequent elections.

It must not be omitted here to state, that the title of *Lélah Máhá-rája* was given by the king to the *Panghúlús* of the tribe *Bódoánda Jakún*, and that of *Sédia Rája* to those of the *Bódoánda Jawa;* with the exception of this custom, the office of *Panghúlú* is hereditary, agreeably to the law of *Perpáti Sabátang* prevailing in *Menangkábówe*, and provided the heir be not insane or an imbecile. The present *Panghúlú* is of the tribe *Bódoánda Jakún*, he succeeded his predecessor *Bahágo*, of the tribe *Bódoánda Jawa*, in 1819.

Súkús.—Under the *Panghúlú* are the eight *Súkús*, or heads of the tribes, into which the population of *Rumbówe* is divided; and who act as their representatives in councils of state, where like the former *Súkús* of *Naning* and *Súngie Ujong*, they possess considerable influence. Nothing of any public importance can be agreed on without their concurrence; and their unanimous vote on disputed points bears down that of the *Panghúlú*. The *Iang de-pertúan Besár* and *Múda* always exert more or less influence over their councils. The signature of the *Súkús* is necessary to the ratification of any treaty, or other similar public document.

Formerly there were only four *Súkús* who had share in the councils, viz. those of *Rumbówe Ilir;* but latterly those of *Rumbówe Ulú* have been admitted, as alluded to above. This change was effected by the policy of the two *Iang de-pertúans*, in order to lessen the influence of the *Panghúlú* and former *Súkús*, and to increase their own.

The names of the tribes and titles of the individuals who represent them are as follow:

Rumbówe Ilír.		*Rumbówe Ulú.*	
Tribes.	*Heads of tribes.*	*Tribes.*	*Heads of Tribes.*
Báttu Ampar,	Gompar Mahárája.	Paya Kúmba Dárrat,	Sáma Rája.
Paya Kúmba Barrat,	Méra Bongsa.	Báttu Bállang,	Andika.
Mancal,	Sangsúra Páhláwan.	Sa Melongang,	Mendalíka.
Tiga Néník,	Bongsa de Bálang.	Sri Lummah,	Seada Mahárája.

To this list may be added the names of four inferior tribes, which

being scanty in number, and most of them of foreign origin, are represented by the heads of the more important tribes, viz. *Tiga, Battu, Anak Malacca, Anak Achi,* (children of Malacca and Achin,) and *Tannah Dattar.* The *Bódoánda* tribes are represented by the *Panghúlús.*

Malays, strangers to *Rumbówe,* while residing there, are amenable to the head of the tribe to which they belong. Settlers are immediately classed in their respective tribes. Those from *Menangkábówe* generally enter that of *Báttu Ampar,* which is the principal of the five tribes that originally emigrated from Menangkábowe; viz. those of *Muncal, Báttu Ballang, Tiga Báttu, and Tannah Dattar.*

A man marrying into another tribe becomes a member of that of the woman, as also the children.

Some of the tribes have peculiar privileges; it is said that the *Bódoándas,* though guilty of the highest crimes, are exempt from capital punishment; banishment and fines being the only penalty to which they are liable. The circumstance of the *Panghúlús* of the independant states being necessarily *Bódoándas* has already been adverted to*.

Although the Malays, like the Greeks and Romans, entertain the highest veneration for old age, still the claims of descent supersede those conferred by years, particularly with regard to the heads of tribes, who have precedence in the councils of the state, conformably to the rank of the tribe they represent. An instance of this, and the power sometimes exercised by the *Súkús* in election, fell under my own observation. At *Súngie Sipát,* on the frontier of *Rumbówe,* in 1833, among the assembly of Malay chiefs there, I observed a boy, whose dress and weapons betokened some rank, and to whom a considerable degree of deference was shewn by the natives. On inquiring, I found him to be the head of the principal tribe, and that, although a younger brother, he had been elected by the *Súkús* as the head of his tribe or clan, in consequence of his elder brother's imbecility. This boy affixed his name, or rather his mark, (for neither he nor any of his seven compeers could write,) immediately after the *Panghúlú* of *Rumbówe,* before the rest of the *Súkús,* some of whom were venerable old men, and grown grey in office.

Mantris.—There are two *Mantris* in *Rumbówe,* viz. Suroh Rája, and Andika *Mantri,* both of the tribe *Bódoánda Jawa.*

Their functions are ill defined, but are principally, I believe, to assist the chiefs with their advice.

* The division of the people of these states into tribes, some of which bear the names of places in Menangkábówe, is a strong additional proof of their origin.

They have no vote in councils, and their influence must be almost entirely personal.

Laksámana.—The *Laksámanas* are also two, PASSAR and KHATIB. The navigation of the river and maritime matters are entrusted to these officers.

Panglímas.—The war-chiefs, or *Panglímas*, are four in number, viz. two *Panglíma Prangs*, PANDIKA *Rája*, and *Panglíma Dallam*. Their duties are similar to those of the former *Panglímas* of *Naning*.

Pertáma.—There is another officer, appointed by the *Iang de pertúan Besár*, whose functions, fortunately for the liege subjects of *Rumbówe*, are seldom called into exercise. This is the *Pertáma*, or executioner. The modes of putting criminals to death are generally confined to the *Panchong* "قنجع" and *Sálang* "سالع".

The former is decapitation: the latter has been already described.

Passing up the *Rumbówe* river, on some high ground on the left bank between *Sempong* and *Pádas*, a leafless, blighted tree was pointed out to me by one of the *Laksámanas* who stated the foot of it to be the place where criminals, subjects of *Rumbówe*, were put to death by *Sálang* "سالع".

Religion.—The inhabitants of *Rumbówe*, like those of the other states of the interior, with the exception of the aborigines, profess the tenets of *Islám*. They are divided into seven *Múkuns*, or parishes, to each of which is attached a mosque, with distinct establishments of priests, as in Naning.

A Kázi named HA'JI HASHIM Sri LUMMAH presides over the whole. The religious customs, fasts, and festivals are similar to those observed in *Naning*.

Visit to Rumbówe.—As *Rumbówe* has seldom been penetrated by Europeans, the following memoranda, from my note book, of a visit paid to the chiefs at its capital, *Bander*, in 1832, by the then Governor of the Straits, the Honorable Mr. IBBETSON, and Brigadier WILSON, C. B. may not perhaps be wholly devoid of interest.

Early on the morning of the 21st October, I joined from camp at *Alorgajeh*, the Governor's suite at *Tábu*, the principal village of *Naning*, and late the residence of the ex-*Panghálú* DHOLL SAYAD.

After breakfasting under one of the thatched quarters that had escaped the pioneer's axe and brand on the late evacuation of this outpost, the party started on horseback along a foot-path, through a wooded country with the *Rumbówe* hills on the right, to *Chirána pútih*, the last village of Naning. This was formerly a populous place. And the residence of the ex-*Panghúlú's* sons, but we found it now entirely deserted, and its houses falling into rapid decay and ruin. Here it was

stated that Dholl Sayad had a manufactory for gun-powder during his late resistance to the Company's troops.

Leaving *Chirána pútih* to the left, the path abruptly turns to the right, over or rather through a muddy *sáwah*, and leads towards the foot of *Gúnong Tampin*. Along the skirt of this mountain, through a dense forest, the party had to travel in Indian file, the narrow foot-path being in several places blocked up by large forest trees lying across to *Qabar Feringí*, or the Frank's grave, which is a mere mound in the jungle. This is one of the boundary marks of the *Rumbówe* and *Naning* territories, and is traditionally said to be the grave of a Portuguese officer, slain by the natives in one of those frequent skirmishes which took place between the followers of the gallant Albuquerque and the "rebellious *Menangkábówes*." The path to *Cóndóng*, from *Qabar Feringí*, lay through the jungle at the foot of the *Rumbówe* range, and gradually improved as we approached that village. *Cóndóng* is a populous hamlet, the first in the *Rumbówe* side of the boundary line, and is situated at the foot of the mountain of *Gúnong Rumbówe*, on whose steep sides, amidst luxuriant forests, appeared singular patches of partially cleared ground, and a few rude huts, the habitation of the lords of the woods and rocks, the *Jakúns*. None of their sylvan eminences however, nor their attendant Hamadryades, condescended to favor the party with their appearance.

From *Cóndóng* to *Pádang Lóko*, the forest decreased in size and denseness, and here and there were traces of clearing and cultivation. A few small verdant patches, not deserving the name of plains, and two or three rivulets, were passed through. The distance from *Cóndóng* to *Pádang Lóko* is about three miles.

From *Pádang Lóko* to *Lágon*, the road is bad, passing for the most part over heavy rice-grounds. The cultivation increased progressively as the belt of forest, the natural boundary between *Naning* and *Rumbówe*, was left behind, until we reached the banks of the *Rumbówe* river at *Lágon*. This stream was just fordable; its waters muddy, and evidently swoln by the rains.

After passing by a miserable path over a very extensive and well cultivated sheet of rice-ground, where the horses were frequently up to the saddle flaps in mud, fording another stream, and crossing a broad swampy plain, from the grassy tufts of which flew the startled lapwing and whistling plover, the cavalcade halted before the mud fort of *Bander*. From its gate issued a motley crowd of well-dressed Malays, brandishing spears, muskets, *pemurasses*, (a sort of blunderbuss,) and umbrellas of state, white and yellow, headed by the *Múda* of *Rumbówe*, and one of the sons of the *Iang de pertúan Besár*, Rája Alı.

The Governor, and Brigadier Wilson, were received by these chiefs with every demonstration of welcome and respect, conducted into the fort, and ushered by Rája Ali into a large temporary building, apparently erected for the occasion, opposite the Rája's primitive palace of thatch.

A salute from the fort jinjals was then fired, much to the discomfiture of one of the pieces, which, possibly from not being accustomed to powder, burst into divers rust-incrusted fragments.

Refreshments were served in, on a large flat tray; they consisted principally of dried fruits, dates, conserves, and sweetmeats, in which, as usual, sugar and oil were manifestly predominant. These were placed on small China dishes, and a number of minute cups of the same material, filled with the steaming infusion of Souchong, fresh from China, sans sucre et sans lait, were warmly pressed upon us.

In the evening, Rája Ali introduced two antique ladies, dressed with almost more than Spartan simplicity. The one his mother, the Princess Dowager Tuánku Putih, and the other, his venerated kinswoman, his aunt. These ogresses of high degree would have rivalled in flow of language and exuberance of gesticulation the most vivacious dowagers, date 1770, Madame du Deffand always excepted.

Tuánku Putih is represented to be a woman of strong masculine mind, and to have considerable influence over her son Rája Ali.

The fort of *Bander* consists of low mud walls, now covered with grass, inclosing a space of ground about 80 yards square.

Around and outside of the walls runs a strong and high palisade. Six high cavaliers of wood, roofed in with *atap*, overlook the faces of the work. On each of their platforms two iron guns are mounted, except on that over the gate-way, where there is a serviceable brass gun, bearing the mark of the Dutch East India Company; the date 1756, A. D. and the maker's name, Peter Seest.

Besides the 12 guns in the cavaliers, were 18 or 20 jinjals lying about the parapets. The houses of the Rája and his personal attendants are within the area comprised by the fort walls.

After passing the night on mattresses and pillows, covered with dirty red silk, embroidered in gold, and which had evidently been abstracted from the *Zenána*, the party left *Bander* early on the following morning.

The Governor and Brigadier Wilson proceeded en route to Malacca viâ *Pádas* and the *Lingie* river. Lieut. Balfour, of the Madras Artillery, and myself, returned by *Brissú*, to camp, which we reached the same evening.

Sayad Sában, the present *Iang de pertúan Múda* of *Rumbówe*, is the son of an Arab named Sayad Ibrahim by his concubine Sri Kamis, a Malay slave girl, a *Khána-záda* of Zain-ud-Din, formerly *Capitan Maláyu* in Malacca. He is a native of *Chembong* in *Rumbówe*, whither his father, a rigid zealot, had proceeded to promulgate and expound the tenets of the Korán.

His son, Sayad Sában, principally resided in *Rumbówe*, but occasionally at Malacca. Being naturally ambitious, he early sought to connect himself by marriage with the ruling families in *Rumbówe*, and *Siac*, in Sumatra. He first married a daughter of the *Iang de pertúan Múda* of Jállabu, Rája Sabun, a son of the second *Menangkábówe* prince, Rája Adil. He then crossed the straits, and obtained the hand of one of the *Siac* chief's daughters. His next matrimonial connexions were with Rája Ali's family.

Sayad Sában is young, active, and intriguing; but at present well disposed to the British Government. Without the bigotry of his father he entertains a thorough contempt for the apathetic opium-eating Malay chiefs, his colleagues in power. He has a taste for war, and proved of great service in placing his father-in-law, Rája Ali, over the heads of his competitors. His activity both for and against the troops in the *Naning* expeditions are well known.

By his own talents and address, the religious influence of his father, and from his Arab extraction, a circumstance to which the Malays invariably pay great deference and respect, and his high connexions, in the securing of which he has shewn great tact and forethought, this adventurer has risen to the *Múda*-ship of *Rumbówe*, and is now aspiring to the entire sovereignty of the states in the interior.

Bennie, the present *Panghúlú* of *Rumbówe*, is an elderly, grave person, with an unpleasing cast of features purely Malayan. He is at heart inimical to the claims of the *Múda* and Rája Ali. During the disturbances at *Lingie*, in 1833, he shamefully deserted his stockade, leaving it with several guns, and a quantity of ammunition, in the hands of the vassal chief Kátas; not without being strongly suspected of having received a considerable bribe for this piece of treachery. He assisted the ex-*Panghúlú* of *Naning* during the time he was in arms against Government. Bennie is addicted to opium-eating, and like other Malays of this class, is not, as experience has shewn, proof against the temptations of a bribe coming in the shape of this fascinating drug.

Among the *Súkús*, few are men of any talent or worthy of any particular notice. Pakkat, an aspirant to the *Panghúlú*-ship, and Suroh

Rája, one of the *Mantris*, are much looked up to by the Malays, with whom their opinions and councils have considerable influence.

I had an opportunity of hearing a very long improviso speech from the latter of these Malayan Ciceros, at *Súngie Sipat*, on the boundary question. His position, unlike that of European orators, was a squatting one, on his hams, with the knees pliantly folded in front. The style of his address, like that of the generality of Asiatics, was grave and pompous; but the flow of his words easy and unbroken, except by a few little attentions bestowed on his betel-pounder *(Gobik)*, by which his right-hand was kept in almost continual motion.

The speech, however, was so long, that the *Panghálú* of *Rumbówe* was fairly snoring before the customary *Ah, bagítu lah!* announced the finale of the effusion. Touching the gift of eloquence, I have observed that the Malays of the interior have generally a better and freer manner of expressing themselves than those of the coast; the language in which they clothe their sentiments is far more figurative, and full of metaphors, drawn from natural objects, and cannot fail to strike the hearer as highly pleasing and simply poetical. Their popular traditions are seldom put to writing, being committed to memory by some of their elders, and sometimes by old Malay ladies of rank, who are regarded by the simple natives, much in the light of a casket containing a valuable gem. Many of their customs are singular and peculiar, and deserving of more attention than has hitherto been paid them.

II.—*Quotations from Original Sanscrit Authorities in proof and illustration of Mr.* Hodgson's *Sketch of Buddhism.*

[Continued from page 38.]

Quotations.

The Swábhávika Doctrine.

1. All things are governed or perfected by *Swabháva**: I too am governed by *Swabháva*. (*Ashta Sahasrika.*)

2. It is proper for the worshipper at the time of worship to reflect thus: I am *Nirlipt*†, and the object of my worship is *Nirlipt;* I am that God *(Iswara)* to whom I address myself. Thus meditating, the worshipper should make *puja* to all the celestials: for example, to *Vajra Satwa Buddha*, let him pay his adorations, first, by recollecting that all things with their *Vija mantras* came from *Swabháva* in this or-

* *Swa*, own, and *bháva*, nature. Idiosyncrasis.

† Intact and intangible, independent.

der:—from the *vija** of the letter Y, air; from that of the letter R, fire; from that of the letter V, or B, water, and from that of the letter L, earth; and from that of the letter S, Mount *Sumèrú*. On the summit of *Sumèr* is a lotos of precious stones, and above the lotos, a moon crescent, upon which sits, supremely exalted, *Vajra Satwa*. And as all (other) things proceed from *Swabháva*, as also does *Vajra Satwa*, thence called the self-existent†. (*Pujá kand.*)

3. All things and beings (in the versatile universe) which are alike perishable, false as a dream, treacherous as a mirage, proceed, according to some, from *Swabhúva*, (nature,) and according to others, from God, *(Iswara;)* and hence it is said, that *Swabhúva* and *Iswara* are essentially one, differing only in name‡. (*Ashta Sahasrika.*)

4. At the general dissolution of all things, the four elements shall be absorbed in *Súnyákár-Akásh* (sheer space) in this order: Earth in water, water in fire, fire in air, and air in *Akásh*, and *Akash* in *Súnyáta*, and *Súnyáta* in *Tathata*§, and *Tathata* in *Buddha*, (which *Mahá Súnyáta*‖) and *Buddha* in *Bhávana*, and *Bhávana* in *Swabháva*. And when existence is again envolved, each shall in the inverse order, progress from the other. From that *Swabháva*, which communicates its property of infinity to *Akásh*, proceeded into being, in *Akásh*, the letter A. and the rest of the letters; and from the letters, *Adi Buddha*¶ and the other *Buddhas;* and from the *Buddhas*, the *Bodhi-Satwas*, and from them the five elements, with their *Vija Mantras*. Such is the *Swabhávika Sansár;* which *Sansár* (universe) constantly revolves between *Pravritti* and *Nirvritti*, like a potter's wheel. (*Divya Avadán.*)

* Root, radix, seed.

† This may teach us caution in the interpretation of terms. I understand the dogma to announce, that infinite intelligence is as much a part of the system of nature as finite. The mystic allusion to the alphabet imports nothing more than its being the indispensable instrument and means of knowledge or wisdom, which the *Buddhists* believe man has the capacity of perfecting up to the standard of infinity.

‡ See the note on No. 3, on the *Yatnika* system.

§ *Tathata*, says the comment, is *Satya Juyan;* and *Bhávana* is *Bhúva* or *Satta*, i. e. sheer entity.

‖ See note on quotation 1 of the section *A'di Buddha.*

¶ Here again I might repeat the caution and remark at quotation 2. I have elsewhere observed, that *Swábhávika* texts, differently interpreted, form the basis of the *Aiswarika* doctrine, as well as that the *Buddhas* of the *Swábhávikas*, who derive their capacity of identifying themselves with the first cause from nature, *which is that cause*, are as largely gifted as the *Buddhas* of the *Aiswarikas*, deriving the same capacity from *A'di Buddha*, who *is that cause*. See remarks on Remusat apud Journal of Bengal Asiatic Society, Nos. 32, 33, and 34.

5. *Mahá Súnyáta* is, according to some, *Swabháva*, and, according to others, *Iswara;* it is like the ethereal expanse, and self-sustained. In that *Mahá Súnyáta*, the letter A, which the *Vija Mantra* of *Upáya**, and the chief of all the *Vija Mantras* of the letters, became manifest. (*Rucha Bhágavati.*)

6. Some say creation is from God: if so, what is the use of *Yatna* or of *Karma* †? That which made all things, will preserve and destroy them; that which governs *Nirvritti*, governs *Pravritti* also. (*Buddha Charitrakávya.*)

7. The sandal tree freely communicates its fragrance to him who tears off its bark. Who is not delighted with its odour? It is from *Swabháva*. (*Kalpalata.*)

8. The elephant's cub, if he find not leafless and thorny creepers in the green wood, becomes thin. The crow avoids the ripe mango‡. The cause is still *Swabháva*. (Do.)

9. Who sharpened the thorn? Who gave their varied forms, colours, and habits to the deer kind, and to the birds? *Swabháva!* It is not according to the will *(ichchha)* of any; and if there be no desire or intention, there can be no intender or designer§. (*Buddha Charitra.*)

10. The conch, which is worthy of all praise, bright as the moon, rated first among excellent things, and which is benevolent to all sentient beings, though it be itself insensate, yields its melodious music, purely by reason of *Swabháva*. (*Kalpalata.*)

11. That hands and feet, and belly and back, and head, in fine, organs of whatever kind, are found in the womb, the wise have attri-

* *Upaya*, the expedient, the energy of nature in a state of activity. See the note on No. 6, of the section *A'di Sangha*.

† See the note on quotation 9 of this head. *Yatna* and *Karma* may here be rendered by intellect and morality.

‡ These are assumed facts in Natural History; but not correct.

§ Here is plainly announced that denial of self-consciousness or personality in the causa causarum which constitutes the great defect of the *Swabhávika* philosophy: and if this denial amount to atheism, the *Swabhávikas* are, for the most part, atheists; their denial also of a moral ruler of the universe being a necessary sequel to it. Excepting, however, a small and mean sect of them, they all affirm eternal necessary entity; nor do any of them reject the soul's existence beyond the grave, or the doctrine of atonement. Still NEWTON'S is, upon the whole, the right judgment, 'Deus sine providentia et dominio nihil est nisi fatum et natura.' The *Swábhávika* attempts to deify nature are but a sad confusion of cause and effect. *But*, in a serious religious point of view, I fail to perceive any superiority possessed by the immaterial pantheism of Bráhmans over the material pantheism of the *Buddhists*. Metempsychosis and absorption are common to both.

buted to *Swabhâva;* and the union of the soul or life *(A'tma)* with body, is also *Swabhâva.* (*Buddha Charitra Kâvya.*)

12. From *Swabhâva* (nature) all things proceeded; by *Swabhâva* all things are preserved. All their differences of structure and of habits are from *Swabhâva:* and from *Swabhâva* comes their destruction. All things are regulated *(suddha)* by *Swabhâva. Swabhâva* is known as the Supreme. (*Pujá kand,*—from the *Rucha Bhágavati,* where the substance is found in sundry passages).

13. *Akâsh* is *Swábhávika,* because it is established, governed, perfected *(suddha)* by its own force or nature. All things are absorbed in it: it is uncreated or eternal; it is revealed by its own force; it is the essence *(A'tma*)* of creation, preservation, and destruction; it is the essence of the five elements; it is infinite; it is intellectual essence *(Bodhanátmika).* The five colours are proper to it; and the five *Buddhas;* and the letters. It is *Súnyáta;* self-supported; omnipresent: to its essence belong both *Pravritti* and *Nirvritti.* This *Akâsh,* which is omnipresent, and essentially intellectual†, because infinite things are absorbed into it, is declared to be infinite. From the infinite nature of this *Akâsh* were produced all moving things, each in its own time, in due procession from another, and with its proper difference of form and habits. From the secret nature of *Akâsh* proceeded likewise, together with the *Vij Mantra* of each one, air with its own mobility; and from air, fire with its own heat; and from fire, water with its intrinsical coldness; and from water, earth with its own proper solidity or heaviness; and from earth, Mount *Sumèru* with its own substance of gold, or with its own sustaining power *(Dhátwátmika);* and from *Sumèru,* all the various kinds of trees and vegetables; and from them, all the variety of colours, shapes, flavours, and fragrances, in leaves, flowers, and fruits. Each derived its essential property (as of fire to burn) from itself; and the order of its procession into existence from the one precedent, by virtue of *Swabhâva,* operating in time. The several manners of going peculiar to the six classes of animate beings (four-legged, two-legged, &c.), and their several modes of birth, (ovi-

* One comment on the comment says, *A'tma* here means *sthán* or *álaya,* i. e. the *ubi* of creation, &c.

† *Akâsh* is here understood as synonymous with *Súnyáta,* that is, as the elemental state of all things, the universal ubi and modus of primal entity, in a state of abstraction from all specific forms: and it is worthy of note, that amidst these primal principles, intelligence has admission. It is therefore affirmed to be a necessary end, or eternal portion of the system of nature, though separated from self-consciousness or personality. In the same manner, *Prâjna,* the sum of all things, Diva natura, is declared to be eternal, and essentially intelligent, though a material principle.

parous, &c.*) all proceeded from *Swabháva.* From the *Swabháva* of each mansion or habitat *(Bhavana)* resulted the differences existing between the several abodes of all the six orders of animate beings. The existence of the fœtus in the womb proceeds from the *Swabháva* of the union of male and female; and its gradual growth and assumption of flesh, bones, skin, and organs, is caused by the joint energy of the *Swabháva* of the fœtus, and that of time, or the *Swabháva* of the fœtus, operating in time. The procession of all things from birth, through gradual increase, to maturity; and thence, through gradual decay, to death, results spontaneously from the nature of each being; as do the differences appropriated to the faculties of the senses and of the mind, and to those external things and internal, which are perceived by them. Speech and sustenance from dressed food in mankind, and the want of speech and the eating of grass in quadrupeds, together with the birth of birds from eggs, of insects from sweat, and of the Gods *(Devatás)* without parentage of any sort: all these marvels proceed from *Swabháva,* (Comment on the *Pujá kand,* quotation 12.)

The Aiswarika *System.*

1. The self-existent God is the sum of perfections, infinite, eternal, without members or passions; one with all things (in *Pravritti),* and separate from all things (in *Nirvritti),* infiniformed and formless, the essence of *Pravritti* and of *Nirvritti*†. (*Swayambhú Purána.*)

2. He whose image is *Súnyáta,* who is like a cypher or point, infinite, unsustained (in *Nirvritti*), and sustained (in *Pravritti*), whose essence is *Nirvritti,* of whom all things are forms (in *Pravritti*), and who is yet formless (in *Nirvritti*), who is the *Iswara,* the first intellectual essence, the *A'di Buddha,* was revealed by his own will. This self-

* By etcætera, understand *always* (more Bráhmanorum). That *Buddhism* forms an integral part of the Indian philosophy is sufficiently proved by the multitude of terms and classifications common to it, and to Bráhmanism. The theogony and cosmogony of the latter are expressly those of the former, with sundry additions only, which serve to prove the posteriority of date, and schismatical secession, of the *Buddhists.* M. Cousin, in his course of philosophy, notices the absence of a sceptical school amongst the Indian philosophers. *Buddhism,* when fully explained, will supply the desideratum; and I would here notice the precipitation with which we are now constantly drawing general conclusions relative to the scope of Indian speculation, from a knowledge of the Bráhmanical writings only—writings equalled or surpassed in number and value by those of the *Budddists, Jains,* and other dissenters from the existing orthodox system of *Vyása* and *Sankara A'chárya.*

† *Pravritti,* the versatile universe; *Nirvritti,* its opposite, this world and the next. *Pravritti* is compounded of *Pra,* an intensitive, and *vritti,* action, occupation, from the root *vá,* to blow as the wind; *Nirvritti,* of *Nir,* a privative, and *vritti,* as before.

existent is he whom all know as the only true Being; and, though the state of *Nirvritti* be his proper and enduring state, yet, for the sake of *Pravritti*, (creation), having become *Pancha-jnyánátmika*, he produced the five *Buddhas* thus; from *Suvi-suddha-dharma-dhátuja jnyán*, *Vairo chana*, the supremely wise, from whom proceed the element of earth, the sight, and colours; and from *Adarshana-jnyán*, *Akshobhya*, from whom proceed the element of water, the faculty of hearing, and all sounds; and from *Pratyavekshana-jnyán*, *Ratna Sambhava*, from whom proceed the element of fire, the sense of smell, and all odours; and from *Samta-jnyán*, *Amitábha*, from whom proceed the element of air, the sense of taste, and all savours; and from *Krityanushtha-jnyán*, *Amogha Siddha*, from whom proceed the element of *ether*, the faculty of touch, and all the sensible properties of outward things dependent thereon. All these five *Buddhas* are *Pravritti kámang*, or the authors of creation. They possess the five *jnyans*, the five colours, the five *mudras*, and the five vehicles*. The five elements, five senses, and five respective objects of sense, are forms of them†. And these five *Buddhas* each produced a *Bodhi-Satwa*, (for the detail, see Asiatic Society's Transactions, vol. xvi.) The five *Bodhi-Satwas* are *Srishti-kámang*, or the immediate agents of creation; and each, in his turn, having become *Sarvaguna*, (invested with all qualities, or invested with the three *gunas*,) produced all things by his fiat. (Comment on quot. 1.)

3. All things existent (in the versatile universe) proceed from some cause (*hetu*): that cause is the *Tathágata*‡ (*Adi Buddha*); and that

* See Appendix A.

† The five *Dhyani Buddhas* are said to be *Pancha Bhúta*, *Pancha Indriya*, and *Pancha Ayatan ákar*. Hence my conjecture that they are mere personifications, according to a theistic theory of the phænomena of the sensible world. The 6th *Dhyáni Buddha* is, in like manner, the icon and source of the 6th sense, and its object, or *Manasa* and *Dharma*, i. e. the sentient principle, soul of the senses, or internal sense, and moral and intellectual phænomena. In the above passage, however, the association of the five elements is not the most accredited one, which (for example) associates hearing and sounds to *Akásh*.

‡ This important word is compounded of *Tatha*, thus, and *gata*, gone or got, and is explained in three ways. 1st, thus got or obtained, viz. the rank of a *Tathágata*, obtained by observance of the rules prescribed for the acquisition of perfect wisdom, of which acquisition, total cessation of births is the efficient consequence. 2nd, thus gone, viz. the *mundane* existence of the *Tathágata*, gone so *as never to return*, mortal births having been closed, and *Nirvritti* obtained, by perfection of knowledge. 3rd, gone in the same manner as it or they (birth or births) came; the sceptical and necessitarian conclusion of those who held that both metempsychosis and absorption are beyond our intellect (as objects of knowledge), and independent of our efforts (as objects of desire and aversion—as contiugencies to which we are liable); and that *that* which causes births, causes

which is the cause of (versatile) existence is the cause of the cessation or extinction of all (such) existence: so said *Sákya Sinha*. (*Bhadra Kalpavadan.*)

4. Body is compounded of the five elements: soul, which animates it, is an enamation from the self-existent. (*Swayambhu purána.*)

5. Those who have suffered many torments in this life, and have even burned in hell, shall, if they piously serve the *Tri Ratna* (or *Triad*), escape from the evils of both. (*Avadán Kalpalatá.*)

6. Subandu (a Rája of Benares) was childless. He devoted himself to the worship of *Iswara* (*A'di Buddha*); and by the grace of *Iswara* a sugar-cane was produced from his semen, from which a son was born to him. The race* remains to this day, and is called Ikshava Aku. (*Avadán Kalpalatá.*)

likewise (proprio vigore) the ultimate cessation of them. The epithet *Tathágata*, therefore, can only be applied to *A'di Buddha*, the self-existent, who is never incarnated, in a figurative, or at least a restricted, sense;—cessation of human births being the essence of what it implies. I have seen the question and answer, 'what is the *Tathágata?* It does not come again,' proposed and solved by the *Raksha Bhagavatí*, in the very spirit and almost in the words of the *Vedas*. One of a thousand proofs that have occurred to me how thoroughly Indian *Buddhism* is. *Tathágata*, thus gone, or gone as he came, as applied to *A'di Buddha*, alludes to his voluntary secession from the versatile world into that of abstraction, of which no mortal can predicate more than that his departure and his advent are *alike* simple results of his volition. Some authors substitute this interpretation, exclusively applicable to *A'di Buddha*, for the third sceptical and general interpretation above given. The synonyme *Sugata*, or 'well gone, for ever quit of versatile existence,' yet further illustrates the ordinary meaning of the word *Tathágata*, as well as the ultimate scope and genius of the *Buddhist* religion, of which the end is, freedom from metempsychosis; and the means, perfect and absolute enlightenment of the understanding, and consequent discovery of the grand secret of nature. What that grand secret, that ultimate truth, that single reality, is, whether all is God, or God is all, seems to be the sole propositum of the oriental philosophic religionists, who have all alike sought to discover it by taking the high priori road. That God is all, appears to be the prevalent and dogmatic determination of the Bráhmanists; that all is God, the preferential but sceptical solution of the *Buddhists;* and, in a large view, I believe it would be difficult to indicate any further essential difference between their theoretic systems, both, as I conceive, the unquestionable growth of the Indian soil, and both founded upon transcendental speculations, conducted in the very same style and manner.

* That of *Sákya Sinha*, and said by the *Buddhists* to belong to the solar line of Indian Princes. Nor is it any proof of the contrary, that the *Pauránika* genealogies exhibit no trace of this race. Those genealogies have been altered again and again, to suit current prejudices or partialities. The Bráhmans who

7. When all was void, perfect void, (*Súnya, Mahá Súnya*) the triliteral syllable *Aum* became manifest, the first created, the ineffably splendid, surrounded by all the radical letters (*Vijá Akshara*), as by a necklace. In that *Aum*, he who is present in all things, formless and passionless, and who possesses the *Tri Ratna*, was produced by his own will. To him I make adoration. (*Swayambhu purána*).

The Kármika System.

1. From the union of *Upáya* and *Prajna**, arose *Manas*, the lord of the senses, and from *Manas* proceeded the ten virtues and the ten vices; so said *Sákya Sinha.* (*Divya Avadan.*)

2. The being of all things is derived from belief, reliance, (*pratyaya,*) in this order: from false knowledge, delusive impression; from delusive impression, general notions; from them, particulars; from them, the six seats (or outward objects) of the senses; from them, contact; from it, definite sensation and perception; from it, thirst or desire; from it, embryotic (physical) existence; from it, birth or actual physical existence; from it, all the distinctions of genus and species among animate things; from them, decay and death, after the manner and period peculiar to each. Such is the procession of all things into existence from *Avidya*, or delusion: and in the inverse order to that of their procession, they retrograde into non-existence. And the egress and regress are both *Karmas*, wherefore this system is called *Kármika.* (*Sákya* to his disciples in the *Racha Bhagavatí.*)

3. The existence of the versatile world is derived sheerly from fancy or imagination, or belief in its reality; and this false notion is the first *Karma* of *Manas*, or first act of the sentient principle, as yet unindividualized ? and unembodied. This belief of the unembodied sentient principle in the reality of a mirage is attended with a longing after it, and a conviction of its worth and reality; which longing is called *Sanscár*, and constitutes the second *Karma* of *Manas*. When *Sanscár* becomes excessive incipient individual, consciousness arises (third *Karma*); thence proceeds an organised and definite, but archetypal body, the seat of that consciousness, (fourth *Karma*;) from the last results the existence of [the six sensible and cognizable properties of] natural† objects, moral and physical, (fifth *Karma.*) When the

obliterated throughout India every vestige of the splendid and extensive literature of the *Buddhas*, would have little scruple in expunging from their own sacred books the royal lineage of the great founder of *Buddhism.*

* See the note on quotation 6 of the section *A'di Sangha.* Also the note on quotation 1 of the *Yatnika* system.

† So I render, after much inquiry, the *Shad Ayatan*, or six seats of the senses external and internal; and which are in detail as follows: *Rupa, Savda, Ganda.*

archetypally embodied sentient principle comes to exercise itself on these properties of things, then definite perception or knowledge is produced, as that this is white, the other, black; this is right, the other wrong, (sixth *Karma.*) Thence arises desire or worldly affection in the archetypal body, (seventh *Karma,*) which leads to corporeal conception, (eighth,) and that to physical birth, (ninth.) From birth result the varieties of genus and species distinguishing animated nature, (tenth *Karma,*) and thence come decay and death in the time and manner peculiar to each, (eleventh and final *Karma.*) Such is the evolution of all things in *Pravritti;* opposed to which is *Nirvritti,* and the

Rasa, Sparsa, Dharma. There is an obvious difficulty as to *Sparsa,* and some also as to *Dharma.* The whole category of the *Ayatans* expresses *outward* things: and after much investigation, I gather, that under *Rupa* is comprised not only colour, but form too, so far as its discrimination (or, in *Kármika* terms, its existence) depends on sight; and that *all* other *un*specified properties of body are referred to *Sparsa,* which therefore includes not only temperature, roughness, and smoothness, and hardness, and its opposite, but also gravity, and even extended figure, though not extension in the abstract.

Here we have not merely the secondary or sensible properties of matter, but also the primary ones; and, as the *existence* of the *Ayatans* or outward objects perceived, is said to be derived from the *Indriyás,* (or from *Mánas,* which is their collective energy,) in other words, to be derived from the sheer exercise of the percipient powers. Nor is there any difficulty thence arising in reference to the *Kármika* doctrine, which clearly affirms that theory by its derivation of all things from *Pratyaya* (belief), or from *Avidya* (ignorance). But the *Indriyás* and *Ayatáns,* with their *necessary connexion,* (and, possibly, also, the making *Avidya* the source of all things,) belong likewise to one section at least of the *Swabhávika* school; and, in regard to it, it will require a nice hand to exhibit this Berkleyan notion existing co-ordinately with the leading tenet of the *Swabhávikas.* In the way of explanation I may observe, first, that the denial of material entity involved in the *Indriyá* and *Ayatán* theory (as in that of *Avidya*) respects solely the versatile world of *Právritti,* or of specific *forms merely,* and does not touch the *Nirvrittiká* state of formative powers and of primal substances, to which latter, in that condition, the qualities of gravity, and even of extended figure, in any sense cognizable by human faculties, are denied, at the same time, that the real and even eternal existence of those substances, in that state, is affirmed.

Second, though *Dharma,* the sixth *Ayatán,* be rendered by virtue, the appropriated object of the internal sense, it must be remembered, that most of the *Swabhávikas,* whilst they deny a moral ruler of the universe, affirm the existence of morality as a part of the system of nature. Others again (the minority) of the *Swabhávikas* reject the sixth *Indriya,* and sixth *Ayatán,* and, with them, the sixth *Dhyáni Buddha,* or *Vajrá Satwa,* who, by the way, is the *Magnus Apollo* of the *Tántrikás,* a sect the mystic and obscene character of whose ritual is redeemed by its unusually explicit enunciation and acknowledgment of a "God above all."

The published explanations of the procession of all things from *Avidya* appear to me irreconcilably to conflict with the ideal basis of the theory.

recurrence of *Nirvritti* is the sheer consequence of the abandonment of all absurd ideas respecting the reality and stability of *Pravritti*, or, which is the same thing, the abandonment of *Avidya:* for, when *Avidya* is relinquished or overcome, *Sanscára* and all the rest of the *Karmas* or acts of the sentient principle, vanish with it; and also, of course, all mundane things and existences, which are thence only derived. Now, therefore, we see that *Pravritti* or the versatile world is the consequence of affection for a shadow, in the belief that it is a substance; and *Nirvritti* is the consequence of an abandonment of all such affection and belief. And *Pravritti* and *Nirvritti*, which divide the universe, are *Karmas;* wherefore the system is called *Kármika*. (Comment on Quotation 2.)

4. Since the world is produced by the *Karma* of *Manas*, or sheer act of the sentient principle, it is therefore called *Kármika*. The manner of procession of all things into existence is thus. From the union of *Upáya* and of *Prájna*, *Manas* proceeded; and from *Manas*, *Avidya;* and from *Avidya*, *Sanscár;* and from *Sanscár*, *Vijnyána;* and from *Vijnyána*, *Námarúpa;* and from *Námarúpa*, the *Shad Ayatan*;* and from them, *Vedana;* and from it, *Trishna;* and from it, *Upadán;* and from it, *Bhava;* and from it, *Jati;* and from it, *Jaramarana*. And from *Játirupya Manas*, (i. e. the sentient principle in organized animate beings) emanated the ten virtues and ten vices. And as men's words and deeds partake of the character of the one or the other, is their lot disposed, felicity being inseparably bound to virtue, and misery to vice, by the very nature of *Karma*.

Such is the procession of all things into existence from *Manas* through *Avidyá;* and when *Avidyá* ceases, all the rest cease with it. Now, since *Avidyá* is a false knowledge, and is also the medium of all mundane existence, when it ceases, the world vanishes; and *Manas*, relieved from its illusion, is absorbed into *Upáya Prajna*†. *Pravritti* is the state of things under the influence of *Avidyá;* and the cessation of *Avidyá* is *Nirvritti: Právritti* and *Nirvritti* are both *Karmas*. (Another comment on quotation 2.)

* i. e. colour, odour, savour, sound, the properties dependent on touch, (which are hardness, and its opposite, temperature, roughness and smoothness, and also I believe gravity and extended figure,) and lastly, right and wrong. They are called the seats of the six senses, the five ordinary, and one internal. In this quotation I have purposely retained the original terms. Their import may be gathered from the immediately preceding quotations and note, which the curious may compare with Mr. Colebrooke's explication. See his paper on the *Bauddhy* philosophy, apud Trans. Roy. As. Socy. quarto vol.

† The *Vámácháras* say into *Prajna Upáya:* see note on quotation 6 of the section *A'di Sangha*.

5. The actions of a man's former births constitute his destiny*. *(Punya paroda.)*

6. He who has received from nature such wisdom as to read his own heart, and those of all others, even he cannot erase the characters which *Vidhátri*† has written on his forehead. *(Avadan Kalpalatá.)*

7. As the faithful servant walks behind his master when he walks, and stands behind him when he stands, so every animate being is bound in the chains of *Karma*. (Ditto.)

8. *Karma* accompanies every one, every where, every instant, through the forest, and across the ocean, and over the highest mountains, into the heaven of *Indra*, and into *Pátála* (hell); and no power can stay it. (Ditto.)

9. Kanál, son of king Asoka', because in one birth he plucked out the golden eyes from a *Chaitya*‡, had his own eyes plucked out in the next; and because he in that birth bestowed a pair of golden eyes on a *Chaitya*, received himself in the succeeding birth eyes of unequalled splendour. *(Avadan Kalpalatá.)*

10. Sa'kya Sinha's son, named Ra'hula Bhadra, remained six years in the womb of his mother Yasodrá. The pain and anxiety of mother and son were caused by the *Karmas* of their former births. (Ditto.)

11. Although I had required (*Sákya* speaks of himself) a perfect body, still, even in this body, defect again appeared; because I had yet to expiate a small residue of the sins of former births. *(Lallita Vistara.)*

The Yátnika System.

1. *Iswara (A'di Buddha)* produced *Yatna* from *Prajna*§; and the cause of *Pravritti* and *Nirvritti* is *Yatna;* and all the difficulties that

* *Daivyá*, identified with *A'di Buddha* by the theistic, and with Fate, by the atheistic doctors. The precise equivalent of the maxim itself is our 'conduct is fate.'

† *Bramha*, but here understood to be *Karma*.

‡ *Chaitya* is the name of the tomb temples or relic-consecrated churches of the *Buddhists*. The essential part of the structure is the lower hemisphere: above this a square basement or *Toran* always supports the acutely conical or pyramidal superstructure, and on all four sides of that basement two eyes are placed. Wherever the lower hemisphere is found, is indisputable evidence of *Buddhism*, e. g. 'the topes' of *Manikálaya* and of *Peshawar*. In niches at the base of the hemisphere are frequently enshrined four of the five *Dhyáni Buddhas*, one opposite to each cardinal point. *Akshobhya* occupies the eastern nich; *Ratna sambháva*, the southern; *Amitabha*, the western, and *Amoghasiddha*, the northern. *Vairochana*, the first *Dhyáni Buddha*, is supposed to occupy the centre, invisibly. Sometimes, however, he appears visibly, being placed at the right-hand of *Akshobhya*.

§ This, as I conceive, is an attempt to remedy that cardinal defect of the older *Swábhávika* school, viz. the denial of personality, and conscious power and wisdom in the first cause. To the same effect is the *Karmika* assertion,

occur in the affairs of this world and the next are vanquished by *Yatna* (or conscious intellectual effort). *(Divya Avadan.)*

2. That above mentioned *Iswara*, by means of *Yatna*, produced the five *Jnyáns*, whence sprang the five *Buddhas*. The five *Buddhas*, in like manner, (i. e. by means of *Yatna*,) produced the five *Bodhi satwas:* and they again, by the same means, created the greater *Devatás* from their bodies, and the lesser ones, from the hairs of their bodies. In like manner, Brahma' created the three *Lokas** and all moving and motionless things. Among mortals, all difficulties are overcome by *Yatna;* for example, those of the sea by ships, those of illness by medicine, those of travelling by equipages—and want of paper, by prepared skin and bark of trees. And as all our worldly obstacles are removed by *Yatna*, so the wisdom which wins *Nirvritti* for us is the result of *Yatna;* because by it alone are charity and the rest of the virtues acquired. Since therefore all the goods of this world and of the next depend upon *Yatna*, Sa'kya Sinha wandered from region to region to teach mankind that cardinal truth. (Comment on Quotation 1.)

3. That *A'di Buddha*, whom the *Swabhávikas* call *Swabháva*, and the *Aiswárikas*, *Iswara*†, produced a *Bodhi satwa*, who, having migrated through the three worlds, and through all six forms of animate existence, and experienced the goods and evils of every state of being, appeared, at last, as *Sákya Sinha*, to teach mankind the real sources of happiness and misery, and the doctrines of the four schools of philosophy‡; and then, by means of *Yatna*, having obtained *Bodhi-jnyán*, and having fulfilled all the *Páramitás* (transcendental virtues), he at length became *Nirván*. *(Divya Avadan.)*

4. Sa'kya Sinha, having emanated from that self-existent which, according to some, is *Swabháva*, and according to others, is *Iswara*, was produced for the purpose of preserving all creatures. He first adopted the *Pravritti Márga* (secular character), and in several births exercised *Yatna* and *Karma*, reaping the fruits of his actions in all the three worlds. He then exercised *Yatna* and *Karma* in the *Nirvritti*

that Manas proceeded from the union of *Upáya* and *Prájna*. *Karma* I understand to mean conscious moral effort, and *Yatna*, conscious intellectual effort. Their admission in respect to human nature implies its *free will*, as their assignation to the divine nature implies its *personality*.

* The celestial, terrene, and infernal divisions of the versatile universe.

† Passages of this entirely pyrrhonic tenure incessantly recur in the oldest and highest authorities of the *Buddhists;* hence the assertion of the preface that Sugatism is rather sceptical than atheistically dogmatic.

‡ Expressly called in the comment the *Swobhávika*, *Aiswárika*, *Yatniká*, and *Kármika* systems. I find no authority in *Sangata* books for the Brahminical nomenclature of the *Bauddha* philosophical schools.

Márga (ascetical or monastic character) essaying a release from this mortal coil, fulfilling the ten virtues from the *Satya* to the *Dwápara Yuga*, till at last, in the *Kali Yuga*, having completely freed himself from sublunary cares, having become a *Bhikshuka**, and gone to *Buddh Gyá*, he rejected and reviled the Bráhmanical penance, did all sorts of true penance for six years under the tree of knowledge on banks of the *Niranjana* river; conquered the *Namuchimara*†, obtained *Bodhi-jnyán*, became the most perfect of the *Buddhas*, seated himself among the *Bodhi satwas*, *(Ananda* ' *Bhikshu*' and the rest,) granted wisdom to the simple, fulfilled the desires of millions of people, and gave *Moksha*‡ to them and to himself. *(Lallita Vistára.)*

5. A hare fell in with a tiger: by means of *Yatna* the hare threw the tiger into a well. Hence it appears that *Yatna* prevails over physical force, knowledge, and the *Mantras*. *(Bhadra Kalpavadan.)*

6. Nara Sinha (Rája of Benares) was a monster of cruelty. Satta Swáma *Rája*, by means of *Yatna*, compelled him to deliver up 100 *Rájkumárs*, whom Nara Sinha had destined for a sacrifice to the gods. *(Bhadra Kalpavadan.)*

7. Sudhana Kumára found a beautiful daughter of a horse-faced Rája named Dru'ma. By means of *Yatna* he carried her off, and kept her; and was immortalized for the exploit. *(Swayambhu Purána.)*

A'di Buddha.

1. Know that when, in the beginning, all was perfect void *(Mahá-sunyáta§)*, and the five elements were not, then *A'di Buddha*, the stainless, was revealed in the form of flame or light.

* Mendicant: one of the four regular orders of the *Bauddhas*.—See the Preface.

† A *Daitya* of *Kánchanapara*, personification of the principle of evil. *Bodhi-jnyán* is the wisdom of *Buddhism*. Ananda was one of the first and ablest of Sa'kya's disciples. The first *code* of *Buddhism* is attributed to him.

‡ Emancipation, absorption.

§ The doctrine of *Sunyáta* is the darkest corner of the metaphysical labyrinth. 18 kinds of *Sunyáta* are enumerated in the *Raksha Bhagavati*. I understand it to mean generally space, which some of *our* philosophers have held to be plenum, others a vacuum. In the transcendental sense of the *Buddhists*, it signifies not merely the universal *ubi*, but also the *modus existendi* of all things in the state of quiescence and abstraction from phænomenal being. The *Buddhists* have eternised matter or nature in *that* state. The energy of nature ever *is*, but is not ever *exerted*; and when not *exerted*, it is considered to be void of all those qualities which necessarily imply perishableness. Most of the *Buddhists* deem (upon different grounds) all phænomena to be as purely illusory as do the Vedantists. The phænomena of the latter are sheer energies of God; those of the former are sheer energies of Nature, deified and substituted for God. See note on quot. *A'di Sangha*. The *Aiswarikas* put their *A'di Buddha* in place of the nature of the older *Swobhávikas*. See Journal of As. Soc. No. 33, Art. 1.

2. He in whom are the three *gunas*, who is the *Mahá Múrti* and the *Visvarúpa* (form of all things), became manifest: he is the self-existent great *Buddha*, the *A'di náth*, the *Mahèswara*.

3. He is the cause of all existences in the three worlds; the cause of their well being also. From his profound meditation *(Dhyán)*, the universe was produced by him.

4. He is the self-existent, the *Iswara*, the sum of perfections, the infinite, void of members or passions: all things are types of him, and yet he was no type: he is the form of all things, and yet formless.

5. He is without parts, shapeless, self-sustained, void of pain and care, eternal and not eternal*; him I salute. (*Káranda Vyúha.*)

6. *A'di Buddha* is without beginning. He is perfect, pure within, the essence of the wisdom of thatness, or absolute truth. He knows all the past. His words are ever the same.

7. He is without second. He is omnipresent. He is *Nairatmya* lion to the *Kútirtha* deer†. (*Nam sangiti.*)

8. I make salutation to *A'di Buddha*, who is one and sole in the universe; who gives every one *Bodhi-jnyán;* whose name is *Upáya;* who became manifest in the greatest *Sunyáta*, as the letter A. Who is the *Tuthagata;* who is known only to those who have attained the wisdom of absolute truth. (Ditto.)

9. As in the mirror we mortals see our forms reflected, so *A'di Buddha* is known (in *Pravritti*) by the 32 *lakshanas* and 80 *anuvinjanas*. (Ditto.)

10. As the rainbow, by means of its five colours, forewarns mortals of the coming weather, so does *A'di Buddha* admonish the world of its good and evil actions by means of his five essential colours‡. (Ditto.)

* One in *Nirvritti;* the other in *Pravritti;* and so of all the preceding contrasted epithets. *Nirvritti* is quiescence and abstraction: *Pravritti*, action and concretion. All the schools admit these two modes, and thus solve the difficulty of different properties existing in cause and in effects.

† Comment says, that *Nairatmya* is '*Sarva Dharmanám nirabhás lakshanang;*' and that *Tirtha* means *Moksha*, and *Kútirtha*, any perversion of the doctrine of *Moksha*, as to say it consists in absorption into *Brahm:* and it explains the whole thus, 'He thunders in the ears of all those who misinterpret *Moksha*, there is no true *Moksha*, but *Sunyáta.*' Another comment gives the sense thus, dividing the sentence into two parts, 'There is no *atma* (life or soul) without him: he alarms the wicked as the lion the deer.' The first commentator is a *Swobhávika;* the second, an *Aiswarika* one.

‡ White, blue, yellow, red, and green, assigned to the five *Dhyani Buddhas.*

For a detail of the *lakshanas*, *anuvinjanas*, *balas*, *basitas*, &c. of the neighbouring quotations, see Appendix A.

11. *A'di Buddha* delights in making happy every sentient being; he tenderly loves those who serve him. His majesty fills all with reverence and awe. He is the assuager of pain and grief. (Ditto.)

12. He is the possessor of the 10 virtues; the giver of the 10 virtues: the lord of the 10 heavens; lord of the Universe: present in the 10 heavens. (Ditto.)

13. By reason of the 10 *jnyáns*, his soul is enlightened. He too is the enlightener of the 10 *jnyáns*. He has 10 forms and 10 significations, and 10 strengths, and 10 *basitas*. He is omnipresent, the chief of the *Munis*. (Ditto.)

14. He has five bodies, and five *juyáns*, and five sights; is the *múkat* of the five *Buddhas*, without partner. (Ditto.)

15. He is the creator of all the *Buddhas:* the chief of the *Bodhi-satwas* are cherished by him. He is the creator of *Prajná*, and of the world; himself unmade. *Aliter*, he made the world by the existence of *Prajná;* himself unmade. He is the author of virtue, the destroyer of all things*. (Ditto.)

16. He is the essence of all essences. He is the *Vajra-átma*. He is the instantly-produced lord of the universe; the creator of *Akásh*. He assumes the form of fire, by reason of the *Prajnya-rupi-jnyán*, to consume the straw of ignorance. (Ditto.)

A'di Prajná, or Dharma.

1. I salute that *Prájná Paramitá*, who by reason of her omniscience causes the tranquillity-seeking *Srávakas*† to obtain absorption; who, by her knowledge of all the ways of action, causes each to go in the path suited to his genius, of whom wise men have said, that the external and internal diversities belonging to all animate nature, as produced by her, who is the mother of *Buddha (Buddha Mátra)* of that *Buddha* to whose service all the *Srávakas* and *Bodhi-satwas* dedicate themselves. (*Panchavingsati Sahasrika.*)

2. First air, then fire, then water, then earth‡, and in the centre of earth, *Suméru*, the sides of which are the residence of the 33 millions

* The comment on this passage is very full, and very curious, in as much as it reduces many of these supreme deities to mere *parts of speech*. Here is the summing up of the comment: 'He *(A'di Buddha)* is the instructor of the *Buddhas* and of the *Bodhi-satwas*. He is known by the knowledge of spiritual wisdom. He is the creator and destroyer of all things, the fountain of virtue.' Spiritual wisdom is stated to consist of *Sila*, *Samádhi*, *Prájná*, *Vimúkhti*, and *Jnyán*.

† Name of one of the ascetical orders of *Buddhists*. See Preface.

‡ In this enumeration of material elements, *Akásh* is omitted: but it is mentioned, and most emphatically, in quo. 4, as in the 50 other places quoted. In

of gods *(Devatás)*, and above these, upon a *Lotos* of precious stones, sustaining the mansion of the moon (or a moon-crescent) sits *Prájná Paramita*, in the *Lallita-ásan* manner* ; *Prájná*, the mother of all the gods (*Prasú-bhagavatúng*), and without beginning or end, *(anádyant.) (Bhadra Kalpavadán.)*

3. I make salutation to the *Prájná Deví*, who is the *Prájná Paramita*, the *Prájná rupa*, the *Nir rupa*, and the universal mother. *(Puja kand.)*

4. Thou *Prájná* art, like *Akásh*, intact and intangible; thou art above all human wants; thou art established by thy own power. He who devoutly serves thee serves the *Tathágata* also. (*Ashta Sahasrika.*)

5. Thou mighty object of my worship! thou *Prájná*, art the sum of all good qualities; and *Buddha* is the *Gúrú* of the world. The wise make no distinction between thee and *Buddha*. (*Ashta Sahasrika.*)

6. O thou who art merciful to thy worshippers, the benevolent, knowing thee to be the source of *Bauddha* excellence, attain perfect happiness by the worship of thee! (Ditto.)

7. Those *Buddhas* who are merciful, and the *Gúrús* of the world, all such *Buddhas* are thy children. Thou art all good, and the universal mother *(Sakaljagat Pitá Mahi)*. (Ditto.)

8. Every *Buddha* assembling his disciples instructs them how from unity thou becomest multiformed and many named. (Ditto.)

9. Thou comest not from any place, thou goest not to any place. Do the wise nowhere find thee† ? (Ditto.)

10. The *Buddhas*, *Pratyéka Buddhas*, and *Srávakas*‡, have all devoutly served thee. By thee alone is absorption obtained. These are truths revealed in all *Shástras*. (Ditto.)

11. What tongue can utter thy praises, thou of whose being (or manifestation) there is no cause by thy own will. No *Purána* hath revealed any attribute by which thou mayest certainly be known. (Ditto.)

12. When all was *Sunyáta*, *Prájná Deví* was revealed out of *Akásh* with the letter U; *Prájná*, the mother of all the *Buddhas* and *Bodhisatwas*, in whose heart *Dharma* ever resides; *Prájná*, who is without the world and the world's wisdom, full of the wisdom of absolute truth:

like manner, the five elements are frequently mentioned, without allusion to the 6th, which however occurs in fit places. Omission of this sort is no denial.

* i. e. one leg tucked under the other, advanced and resting on the bow of the moon-crescent.

† The force of the question is this, the wise certainly find thee.

‡ The *Buddhas* are of three grades: the highest is *Mahá Yána*, the medial, *Pratyéka*, and the lowest, *Sraváka*. These three grades are called collectively the *Tri-Yána*, or three chariots, bearing their possessors to transcendental glory.

the giver and the ikon of that wisdom; the ever living (*Sanatani*); the inscrutable; the mother of *Buddha**. (*Puja kand.*)

13. O *Prájná Dévi!* thou art the mother (*Janani*) of all the *Budhas*, the grandmother of the *Bodhi-satwas*, and great grandmother of all (other) creatures! thou art the goddess (*Isáni*). (Ditto.)

14. Thou, *Sri Bhagavati Dévi Prájná*, art the sum of all the sciences, the mother of all the *Buddhas*, the enlightener of *Bodhi-jnyán*, the light of the universe! (*Gunakáranda Vyúha.*)

15. The humbler of the pride of *Namuchi-mára*, and of all proud ones: the giver of the quality of *Satya*; the possessor of all the sciences, the *Lakshmi*; the protector of all mortals, such is the *Dharma Ratna*. (Ditto.)

16. All that the *Buddhas* have said, as contained in the *Mahá Yána Sútra* and the rest of the *Sútras*, is also *Dharma Ratna*†. (Ditto.)

17. Because *Buddha* sits on the brow, the splendour thence derived to thy form illuminates all the ethereal expanse, and sheds over the three worlds the light of a million of suns, the four *Devatás*, *Brahma*, *Vishnu*, *Mahésa*, and *Indra*, are oppressed beneath thy feet, which is advanced in the *Alir-Asan*. O *Arya Tárá!* he who shall meditate on thee in this form shall be relieved from all future births. (*Saraká Dharáṭ*.)

18. Thy manifestation, say some of the wise, is thus, from the roots of the hairs of thy body sprang *Akásh*, heaven, earth, and hades, together with their inhabitants, the greater *Devatás*, the lesser, the *Daityas*, the *Siddhás*, *Gandharbas*, and *Nágas*. So too (from thy hairs), wonderful to tell! were produced the various mansions of the *Buddhas*, together with the thousands of *Buddhas* who occupy them§. From thy own being were formed all moving and motionless things without exception. (Ditto.)

19. Salutation to *Prájná Dévi*, from whom, in the form of desire,

* *Sugatjá*, which the *Vámáchárs* render, 'of whom *Buddha* was born;' the *Dakshináchárs*, 'born of *Buddha*,' or goer to *Buddha*, as wife to husband.

† Hence the scriptures are worshipped as forms of *A'di Dharma Sútra*, means literally thread (of discourse), aphorism. *Sákya*, like other Indian sages, taught orally, and it is doubtful if he himself reduced his doctrines to a written code, though the great scriptures of the sect are now generally attributed to him. *Sútra* is now the title of the *books* of highest authority among the *Bauddhas*.

‡ Composed by *Sarvajna Mitrapada* of *Kashmír*, and in very high esteem, though not of scriptural authority.

§ These thousands of *Buddhas* of immortal mould are somewhat opposed to the so called simplicity of *Buddhism!!* whatever were the primitive doctrines of *Sákya*, it is certain that the system attributed to him, and now found in the written authorities of the sect, is the very antipodes of simplicity.

the production of the world was excellently obtained*, who is beautiful as the full moon, the mother of *A'di Buddha*, (*Jinindra Matra*,) and wife of (the other) *Buddha*, who is imperishable as *adamant*. (*Sádhana Mála*.)

20. That *Yoni*, from which the world was made manifest, is the *Trikonákár Yantra*. In the midst of the *Yantra* or *trikon* (triangle) is a *bindú* (point, cypher) : from that *bindú*, *A'di Prájná* revealed herself by her own will. From one side of the triangle *A'di Prájná* produced *Buddha*, and from another side, *Dharma*, and from the third side, *Sangha*. That *A'di Prájná* is the mother of that *Buddha* who issued from the first side ; and *Dharma*, who issued from the second side, is the wife of the *Buddha* of the first side, and the mother of the other *Buddhas*. (Comment on quotation 19.)

21. Salutation to *Prájná Páramitá*, the infinite, who, when all was void, was revealed by her own will, out of the letter U. *Prájná*, the *Sakti* of *Upáya*, the sustainer of all things, *(Dharmiki)* the mother of the world, *(Jagat-mátra ;)* the *Dhyánrúpa*, the mother of the *Buddhas*. The modesty of women is a form of her, and the prosperity of all earthly things. She is the wisdom of mortals, and the ease, and the joy, and the emancipation, and the knowledge. *Prájná* is present every where. (*Sádhana Mála*.)

A'di Sangha.

1. That *A'mitabha*, by virtue of his *Samta-jnyán*, created the *Bodhisatwa* named *Padma-páni*, and committed to his hands the *lotos*†. (*Gunakáranda Vyúha*.)

* *Dharmadya-sangata Kamrupini*, variously rendered, ' well got from the rise of virtue,' ' well got from the rise or origin of the world ;' also as in text, *Dharmadya*, the source of all things, signifies likewise the *Yoni*, of which the type is a triangle. See 20. The triangle is a familiar symbol in temples of the *Buddha Saktis*, and of the *Triad*. △ The point in the midst represents either *A'di Buddha* or *A'di Prajná*, according to the theistic or atheistic tendency of his opinions who uses it. Our commentator is of the *Vámáchár* or Atheistic school, and such also is his text.

† Type of creative power. *A'mitabha* is the 4th *Dhyani* or celestial *Buddha* : *Padma-páni* is his *Æon* and executive minister. *Padma-páni* is the *præsens Divus* and creator of the *existing* system of worlds. Hence his identification with the third member of the *Triad*. He is figured as a graceful youth, erect, and bearing in either hand a *lotos* and a jewel. The last circumstance explains the meaning of the celebrated *Shadakshari Mantra*, or six-lettered invocation of him, viz. *Om ! Mane padme hom !* of which so many corrupt versions and more corrupt interpretations have appeared from Chinese, Tibetan, Japanese, Mongolese, and other sources. The *mantra* in question is one of three, addressed to the several members of the *Triad*. But the *præsens Divus*, whether he be Augustus or *Padma-páni*, is every thing with the many. Hence the notoriety of *this*

2. From between his *(Padma-páni's)* shoulders sprang *Brahma;* from his forehead, *Mahá Déva;* from his two eyes, the sun and moon; from his mouth, the air; from his teeth, *Saraswatí;* from his belly, *Varuna;* from his knees, *Lakshmí;* from his feet, the earth; from his navel, water; from the roots of his hair, the *Indras* and other *Devatás.* (Ditto.)

3. For the sake of obtaining *Nirvritti,* I devote myself to the feet of *Sangha,* who, having assumed the three *Gunas,* created the three worlds. (*Pujá kand.*)

4. He *(Padma-páni)* is the possessor of *Satya Dharma,* the *Bodhisatwa,* the lord of the world, the *Mahá-satwa,* the master of all the *Dharmas.* (*Gunakáranda Vyúha*).

5. The lord of all worlds, (*Sarvalokádhípa,*) the *Sri-mán,* the *Dharma Rája,* the *Lokèswara,* sprang from *A'di Buddha** (*Jinatmuja.*) Such is he whom men know for the *Sangha Ratna.* (Ditto.)

6. From the union of the essences of *Upáya* and of *Prájná*† proceeded the world, which is *Sangha.*

mantra, whilst the others are hardly ever heard of, and have thus remained unknown to our travellers.

* From *A'mitabha Buddha* immediately: mediately from *A'di Buddha.*

† Such is the *Aiswarika* reading. The *Prájnikas* read 'from the union of *Prájna* and *Upáya.*'

With the former, *Upáya* is *A'di Buddha,* the efficient and plastic cause, or only the former; and *Prájná* is *A'di Dharma,* plastic cause, a biunity with *Buddha,* or only a product. With the latter, *Upáya* is the energy of *Prájna,* the universal material cause.

The *original* aphorism, as I believe, is, '*Prájnoupayatmakang jagata,*' which I thus translate: 'From the universal material principle, in a state of activity, proceeded the world.' This original *Sutra* has, however, undergone two transformations to suit it to the respective doctrines of the *Triadic Aiswarikas* and of the *Kármikas.* The version of the former is, *Upáyprájnamakang sangha;* that of the latter is, *Upáyprájnatmakang manasa.* Of both, the *Upáya* is identical with *A'di Buddha,* and the *Prájná* with *A'di Dharma.* But the result—the unsophisticated *jagat* of the *Prájnikas,* became *A'di Sangha,* a *creator,* with the *Aiswarikas;* and *Manasa,* the sentient principle in man, the first production, and *producer of all other things,* with the *Kármikas. Avidya,* or the condition of mundane things and existences, is an illusion, alike with the *Prájnikas* and with the *Kármikas.* But, whilst the former consider *Avidya* the universal affection of the *material* and *immediate cause* of all things whatever; the latter regard *Avidya* as an affection of *manas* merely, which they hold to be an *immaterial* principle and the *mediate* cause of all things else, *A'di Buddha* being their final cause. The phænomena of both are homogeneous and unreal: but the *Prájnikas* derive them, directly, from a material source—the *Kármikas,* indirectly, from an immaterial fount. Our sober European thoughts and languages can scarcely

P. S. With regard to the consistency or otherwise of the view of the subject taken in the sketch of *Buddhism*, with the general tenor of the foregone quotations, I would observe, that the ideal theory involved in the *Prájnika, Swabhávika*, and in the *Karmika* doctrines, was omitted by me in the sketch, from some then remaining hesitation as to its real drift, as well as its connexion with those schools, *and no other*. Upon this *exclusive* connexion I have still some doubt. For the rest, I retain unchanged the opinions expressed in the sketch, that the *Karmika* and *Yátnika* schools are more recent than the others—that they owe their origin to attempts to qualify the extravagant quietism of the primitive *Swabhávikas*, and even of the *Aiswarikas*—and that their contradistinguishing mark is the preference given by them respectively to morals, or to intellect, with a view to final beautitude. The assertion of the *Ashtasahasrika*, that *Swabháva*, or nature absolutely disposes of us, not less than the assertion of others, that an immaterial abstraction *so* disposes of us, very logically leads the author of the *Buddha Charitra* to deny the use of virtue or intellect. To oppose these ancient notions was, I conceive, the especial object of those who, by laying due stress on *Karma* and *Yatna*, gave rise to the *Kármika* and *Yátnika* schools. But that these latter entertained such just and adequate notions of God's providence, or man's free will, as we are familiar with, it is not necessary to suppose, and is altogether improbable. None such they *could* entertain if, as I believe, they adopted the more general principles of their predeccssors. The ideal theory or denial of the reality of the versatile world, has, in some of its numerous phrases, a philosophical foundation; but its prevalence and popularity among the *Buddhists* are ascribable principally to that enthusiastic contempt of action for which these quietists are so remarkable. Their passionate love of abstractions is another prop of this theory.

cope with such extravagancies as these: but it would seem we must call the one doctrine material, the other, immaterial, idealism.

The phænomena of the *Prájnikas* are sheer energies of matter, those of the *Karmikas*, are sheer (human) perceptions. The notions of the former rest on general grounds—those of the latter, on particular ones, or (as it has been phrased) upon the putting the world into a man's self; the Greek "panton metron anthropos."

Erratum in No. 49, January, 1836.
Page 30, line 2 of note, *for* 'preferred,' *read* 'postponed.'
,, (et passim) *for* 'Sangata,' *read* 'Saugata.'

APPENDIX A.

Detailed Enumeration of some of the principal Attributes of A'DI BUDDHA, *referred to in the proceeding Quatations under that Head.*

द्वात्रिंशल्लक्षणानि।

चक्राङ्कितपाणिपादतलता १
सुप्रतिष्ठितपाणिपादतलता २
जालावद्धवज्राङ्गुलिपाणिपाद तलता ३
मृदुतरुणहस्तपादतलता ४ सप्तोन्नतता ५
दीर्घाङ्गुलिता ६ आयतपार्ष्णिता ७ ऋजुगात्रता ८
उत्सङ्गपादता ९ ऊर्द्धागरोमता १०
ऐणेयजंघता ११ पतुरबाहुता १२
कोषगतवस्तिगुह्यता १३ सुवर्णवर्णता १४
शुक्लदशता १५ प्रदक्षिणावर्त्तकरोमता १६
ऊर्णालंकृतभ्रुखता १७ सिंहपूर्वार्द्धकायता १८
सुसंभृतस्कन्धता १९ चित्तांतरांगता २०
रसरसाग्रता २१ न्यग्रोधपरिमण्डलता २२
उष्णीषशिरस्कता २३ प्रभूतजिह्वता २४
प्रलम्बरता २५ सिंहहनुता २६ शुक्लदनुता २७
समदन्तता २८ हंसविक्रान्तगामिता २९
अविरलदन्तता ३० समचत्वारिंशद्दन्तता ३१
अभिनीलनेत्रता ३२

अशीति व्यंजनानि।

आताम्रनखता १ स्निग्धनखता २ तुंगनखता ३
वृत्तांगुलिता ४ अनुपूर्वांगुलिता ५ गूढशिरता ६
निग्रन्थिशिरता ७ गूढगुल्फता ८ अविषमपादता ९
सिंहविक्रान्तगामिता १० नागविक्रान्तगामिता ११
हंसविक्रान्तगामिता १२ वृषभविक्रान्तगामिता १३
प्रदक्षिणगामिता १४ चारुगामिता १५
अवक्रगामिता १६ वृत्तगात्रता १७ सृष्टगात्रता १८
अनुपूर्वगात्रता १९ शुचिगात्रता २० मृदुगात्रता २१
विशुद्धगात्रता २२ परिपूर्णव्यंजनता २३
पृथुचारुमण्डलगात्रता २४ समक्रमता २५
विशुद्धनेत्रता २६ सुकुमारगात्रता २७
अदीनगात्रता २८ उत्साहगात्रता २९
गम्भीरकुक्षिता ३० प्रसन्नगात्रता ३१
सुविभक्तांगप्रत्यंगता ३२ विनिमिरशुद्धालोकता ३३
वृत्तांगकुक्षिता ३४ सृष्टकुक्षिता ३५
अभयकुक्षिता ३६ अक्षोभकुक्षिता ३७

गम्भीरनाभिता ३८ प्रदक्षिणावर्त्तनाभिता ३९
समन्तप्राशादिकता ४० शुचिसमुदाचारता ४१
अपगतैलकालगात्रता ४२
गन्धसदृशसुकुमारपाणिता ४३
स्निग्धपाणिलेखिता ४४ गम्भीरपाणिलेखिता ४५
आयतपाणिलेखिता ४६ नात्यायतवचनता ४७
बिम्बप्रतिबिम्बोष्ठता ४८ मृदुजिह्वता ४९
तनुजिह्वता ५० मेघगर्जितघोषता ५१
रक्तजिह्वता ५२ मधुरचारुमंजुस्वरता ५३
वृत्तदंष्ट्रता ५४ तीक्ष्णदंष्ट्रता ५५ शुक्लदंष्ट्रता ५६
समदंष्ट्रता ५७ अनुपूर्वदंष्ट्रता ५८ तुंगनासिकता ५९
शुचिनासिकता ६० विशालनेत्रता ६१
चित्रपक्ष्मता ६२ सीतासितकमलदलनेत्रता ६३
आयतभ्रूकता ६४ शुक्लभ्रूकता ६५ सुस्निग्धभ्रूकता ६६
पीनायतभुजशीर्षता ६७ समकर्णता ६८
अनुपहतकर्णेन्द्रियता ६९ अपरिस्फुटललाटता ७०
पृथुललाटता ७१ सुपरिपूर्णोत्तमांगता ७२
भ्रमरसदृशकेशता ७३ चित्रकेशता ७४
गुह्यकेशता ७५ असंगुणितकेशता ७६
अपुरुषकेशता ७७ सुरभिकेशता ७८
श्रीवत्समुष्टिकनंधावर्त्तोल्लचिह्नितपाणिपादतलता ७९ ८०

पंच वर्णानि।

श्वेत १ नील २ पीत ३ रक्त ४ श्याम ५

दश पारमिता।

दान १ शील २ क्षान्ति ३ वीर्य ४ ध्यान ५
प्रज्ञा ६ उपाय ७ बल ८ प्रणिधि ९ ज्ञान १०

दश भुवनानि।

प्रमुदिता १ विमला २ प्रभाकरी ३ अर्चिष्मती ४
सुदुर्जया ५ अभिमुखी ६ दूरंगमा ७
साधुमती ८ समन्तप्रभा ९ धर्ममेघा

दश ज्ञानानि।

दुःखज्ञानं १ समुदयज्ञानं २ निरोधज्ञानं ३
मार्गज्ञानं ४ धर्मज्ञानं ५ अर्थज्ञानं ६ संवृत्तिज्ञानं ७
परचित्तज्ञानं ८ क्षयज्ञानं ९ अनुत्पादज्ञानं १०

दशाकाराः।

पृथिव्याकारः १ जलाकारः २ अग्न्याकारः ३
वाय्वाकारः ४ आकाशाकारः ५ आकाशनिरोधाकारः ६
वायुनिरोधाकारः ७ अग्निनिरोधाकारः ८
जलनिरोधाकारः ९ पृथिवीनिरोधाकारः १०

दशार्थाः।

प्राणार्थं १ अपानार्थं २ समानार्थं ३
उदानार्थं ४ व्यानार्थं ५ कूर्मार्थं ६ कृकरार्थं ७
नागार्थं ८ देवदत्तार्थं ९ धनंजयार्थं १०

दश बलानि।

स्थानास्थानज्ञानबलं १ कर्मविपाकज्ञानबलं २
नानाधातुज्ञानबलं ३ नानाभिमुक्तिज्ञानबलं ४
सत्वेन्द्रियपरापरज्ञानबलं ५
सर्वत्रगामिप्रतिपत्तिज्ञानबलं ६
ध्यान विमोच समाधि समापत्ति संक्लेश व्यवदान
स्थान ज्ञानबलं ७ पूर्वनिवासानुस्मृतिज्ञानबलं ८
च्युत्युपपत्तिज्ञानबलं ९ आस्रवक्षयज्ञानबलं १०

दश वशिताः।

आयुर्वशिता १ चित्तवशिता २ परिष्कारवशिता ३
धर्मवशिता ४ अभिवशिता ५ जन्मवशिता ६
अधिमुक्तिवशिता ७ प्रणिधानवशिता ८
कर्मवशिता ९ ज्ञानवशिता १०

पंच कायाः।

धर्मकायः १ संभोगकायः २ निर्माणकायः ३
महासुखकायः ४ ज्ञानकायः ५

पंच चक्षुः।

मांसचक्षुः १ धर्मचक्षुः २ प्रज्ञानचक्षुः ३ दिव्यचक्षुः ४
बुद्धचक्षुः ५

इतिबुद्धलक्षणादिसमाप्ताः।

अथ अष्टादशशून्यता लिख्यते।

अध्यात्मशून्यता १ बहिर्धाशून्यता २
अध्यात्मबहिर्धाशून्यता ३ शून्यताशून्यता ४
महाशून्यता ५ परमार्थशून्यता ६ संस्कृतशून्यता ७
असंस्कृतशून्यता ८ अत्यन्तशून्यता ९
अनवराग्रशून्यता १० अनवकारशून्यता ११
प्रकृतिशून्यता १२ सर्वधर्मशून्यता १३
स्वलक्षणशून्यता १४ अनुपलंभशून्यता १५
अभावशून्यता १६ स्वभावशून्यता १७
अभावस्वभावशून्यता १८
मतांतरे विंशति शून्यताः लक्षणशून्यता १९
अलक्षणशून्यता २०

०

APPENDIX B.

Classified Enumeration of the principal Objects of Bauddha Worship.

Ekámnáya.

Upáya.
'Adi-Buddha.
Mahá-Vairochana.

Ekámnáyí.

Prajná.
Prajná-páramitá.

Dwayámnáya.

1. 2.
Upáya. Prajná. { Root of theistic doctrine.
1. 2.
Prajná. Upáya. { Root of atheistic ditto.

Trayámnáya.

2. 1. 3.
Dharma. Buddha. Sangha.
2. 1. 3.
Sangha. Buddha. Dharma.
1. 2. 3.
Buddha. Dharma. Sangha.

Pancha-Buddhámnáya.

4. 2. 1. 3. 5.
Amitábha. Akshobhya. Vairochana. Ratnasambhava. Amoghasiddha.

Pancha-Prajnámnáyí.

4. 2. 1. 3. 5.
Pándará. Lochaná. Vajradhátwísvari. Mámakí. Tárá.

Pancha-Sanghámnáya.

4. 2. 1. 3. 5.
Padmapáni. Vajrapáni. Samantabhadra. Ratnapáni. Viswapáni.

Pancha-Sangha-Prajnámnáyí.

4. 2. 1. 3. 5.
Bhrikutí-tárá. Ugratárá. Sitatárá. Ratnatárá. Viswatárá.

Matántara-Pancha-Buddhámnáya.

1. 2. 3. 4. 5.
Vairochana. Akshobhya. Ratnasambhava. Amitábha. Amoghasiddha.

Matántara-Pancha-Prajnámnáyí.

1. 2. 3. 4. 5.
Vajradhátwísvarí. Lochaná. Mámakí. Pandará. Tárá.

Matántara-Pancha-Sanghámnáya.

1. 2. 3. 4. 5.
Samantabhadra. Vajrapáni. Ratnapáni. Padmapáni. Viswapáni.

Matántara-Pancha-Sangha-Prajnámnáyí.

1. 2. 3. 4. 5.
Sitatárá. Ugratárá. Ratnatárá. Bhrikutitárá. Visvatárá.

Matántara-Pancha-Buddhámnáya.

4. 2. 1. 3. 5.
Amitábha. Amoghasiddha. Vairochana. Ratnasambhava. Akshobhya.

Matántara-Pancha-Prajnámnáyí.

4. 2. 1. 3. 5.
Tárá. Mámakí. Vajradhátwísvarí. Pándará. Lochaná.

Shad-A'mnáya-Buddháh.

1. 2. 3. 4. 5. 6.
Vairochana. Akshobhya. Ratnasambhava. Amitábha. Amoghasiddha. Vajrasatwa.

Shat-Prajnámnáyí.

1. 2. 3. 4. 5. 6.
Vajradhátwísvari. Lochaná. Mámakí. Pándará. Tárá. Vajrasatwátmiká.

Shat-Sanghámnáya.

1. 2. 3. 4. 5. 6.
Samantabhadra. Vajrapáni. Ratnapáni. Padmapáni. Viswapáni. Ghantapáni.

Mánushíya-Sapta-Buddhámnáya.

1. 2. 3. 4. 5. 6. 7.
Vipasyí. Sikhí. Viswabhá. Kakútsanda. Kanakamuni. Kásyapa. Sákyasinha.

Matántara-Mánushíya-Sapta-Buddhámnáya.

6. 4. 2. 1. 3. 5. 7.
Kásyapa. Kakútsanda. Sikhí. Vipasyí. Viswabhú. Kanakamuni. Sákyasinha.

Prajná-Misrita-Dhyáni-Nava-Buddhámnáya.

2. 1. 3.
Akshobhya. Vairochana-Vajradhátwísvarí. Ratnasambhava.

8. 6. 4. 5. 7. 9.
Pándará. Lochaná. Amitábha. Amoghasiddha. Mámakí. Tárá.

Dhyáni-Nava-Buddhámnáya.

4. 2. 1. 3. 5.
Amitábha. Akshobhya. Vairochana. Ratnasambhava. Amoghasiddha.

8. 6. 7. 9.
Vajradharma. Vajrasatwa. Vajrarája. Vajrakarma.

Dhyáni-Nava-Prajnámnáyí.

4. 2. 1. 3. 5.
Pándará. Lochaná. Vajradhátwísvarí. Mámakí. Tárá.

8. 6. 7. 9.
Dharmavajriní. Vajrasatwátmiká. Ratnavajriní. Karmavajriní.

Dhyáni-Nava-Sanghámndyáh.

4. 2. 1. 3. 5.
Padmapáni. Vajrapáni. Samantabhadra. Ratnapáni. Viswapáni.

8. 6. 7. 9.
Dharmapáni. Ghantapáni. Manipáni. Karmapáni.

Misrita-Nava-Buddhámnáyánám ete Misrita-Nava-Sanghámnáyáh.

2. 1. 3.
Maitreya. Avalokiteswara. Gaganaganja.

6. 4. 5. 7.
Manjughosha. Samantabhadra. Vajrapáni. Sarva-nivarana-vishkambhí.

8. 9.
Kshitigarbha. Khagarbha.

Misrita-Nava-Buddhámnáyánam ete Nava-Dharmámnáyáh Paustakáh Buddha-Dharma-sangha-Mandale Púja nakrame étan Múlam.

2. 1. 3.
Gandavyúha. Prajná-páramitá. Dasabhúmíswara.

6. 4. 5. 7.
Saddharmapundaríka. Samádhirája. Lankávatára. Tathágataguhyaká.

8. 9.
Lalita-vistara. Suvarna-prabhá.

Nava-Bodhisatwa-Sangha-Prajnámnáyáh.

4. 2. 1. 3. 5.
Sitatárá. Maitráyani. Bhrikutítárá. Pushpatárá. Ekajatá.

8. 6. 7. 9.
Dípatárá. Vágíswarí. Dhúpatárá. Gandhatárá.

Nava-Devi-Prajnámnáyí.

2. 1. 3. 8. 4.
Vajravidáriní. Vasundhará. Ganapati-hrídayá. Márichí. Ushnísha-vijayá.

5. 7. 8. 9.
Parnasavarí. Grahamátriká. Pratyangirá. Dhwajágrakeyúri.

Misrita-Nava-Dharmámnáyáh.

4. Pándará. 2. Lochaná. 1. Vajradhátwíswarí. 3. Mámakí. 5. Tárá.
8. Pratyangirá. 6. Vajrasatwátmiká. 7. Vasundharí. 9. Guhyeswarí.

Mánushlya-Nava-Buddhámnáyáh.

4. Sikhí Ratnagarbha. 2. Dípankara. 1. Vipasyí. 3. Viswabhú. 5.
8. Kásyapa. 6. Kakutsanda. 7. Kanakamuni. 9. Sákyasinha.

Mánushlyá-Nava-Buddhámnáyáh.

1. Dípankara. 2. Ratnagarbha. 3. Vipasyí. 4. Sikhí. 5. Viswabhú.
6. Kakutsanda. 7. Kanakamuni. 8. Kásyapa. 9. Sákyasinha.

Mánushlya-Nava-Prajnámnáyí.

1. Jwálávatí. 2. Lakshanavatí. 3. Vipasyantí. 4. Sikhámáliní. 5. Viswadharí.
6. Kakudvatí.. 7. Kanthanamáliní. 8. Mahídharí. 9. Yasodharí.

Nava Bhikshu-Sanghámnáyáh.

1. Pradipeswara. 2. Ratnarája. 3. Mahámati. 4. Ratnadharí. 5. A'kásaganja.
6. Sakalamangala. 7. Kanakarája. 8. Dharmodara. 9. Ananda.

Iti Srí-Ekámnáyádi-Navámnáya-Devatáh Samápláh.

N. B. The authority for these details is the Dharma Sangraha, or *catalogue raisonné* of the terminology of Bauddha system of philosophy and religion.

III.—*Notes explanatory of a Collection of Geological Specimens from the Country between Hyderabad and Nágpur.* By J. G. Malcolmson, *Assistant Surgeon, Madras Establishment.* *Pl. V.*

I had the pleasure of forwarding from Madras, a selection of geological specimens, collected in May, 1833, between the cities of Hyderabad and Nágpur. I regret, that circumstances prevented my doing this sooner, and that the notes in explanation of the localities whence they were obtained, must now be short and imperfect; I hope, however, that the specimens themselves will be of use in illustrating the geology of a tract of country hitherto undescribed, and which connects the formations of the south-east of the Deccan, with those in the neighbourhood of the valley of the Narbada.

From my inability to identify, describe, and figure the numerous fossils, discovered in the tract of country between the Godavery and the town of Hinganghát, 47 miles south of Nágpur, and the importance of these, in reference to the questions as to the relative age of the great trap formation of the Deccan, and of the west of India, and the clayslate formation of Voysey, with its associated sandstone*, and the periods of elevation of the granitic rocks, on which

* See his account of the diamond mines of Banganapilly.—As. Res. xviii.

J B Tassin Lith.c Press Calcutta

they appear universally to rest; I am induced, contrary to my former intention, to take to England with me, those specimens of which there are no duplicates. The separation of the collection would greatly lessen its value, by depriving me of the opportunity of comparing, with each other, and with arranged collections, the fragments of those of which duplicates were not preserved, and of thus restoring the fossils of which no perfect specimen was found. A selection of the most perfect were, also, sent to Mr. Lyell, but as he considers it requisite that numerous species should be ascertained previous to arriving at any conclusion as to the age of the fossiliferous rocks, it may be for the advantage of Indian geology, to submit the rest of the specimens to him; and on the characters being determined, to return a portion of them to India. There are, however, a sufficient number of duplicates to illustrate the outlines of the geology of the interesting tract of country referred to, and to connect the singular phenomena observed, with others, to the west and east of the route, and in the countries of the peninsula to the south, and the Bengal provinces to the north. The outline map includes several places, inserted in the plans published along with Dr. Voysey's papers and Captain Jenkin's Account of the Mineralogy of Nágpur, p. 199, of the 18th volume of the Asiatic Researches; the interval between which, it will assist in filling up. I shall seldom use mineralogical terms, except I have had an opportunity of comparing the specimens with those collected by persons well acquainted with the science; and when they do occur, an examination of the specimens will afford the means of correcting any errors that may be fallen into. The geological relations of the strata were ascertained with as much care as the nature of the country permitted, and no exertion was spared in tracing them as far as possible, both on the plains, at the foot of the hills, and their most inaccessible summits. My avocations however were unfavourable, and a person more at leisure would find an ample field to reward his labours. He must, however, be prepared to pursue his examinations in the height of the hot season, when the grass and wood jungle are less luxuriant, and the plains free from their covering of *jawárí* and other grain.

Some account has already been published* of the country between Masulipatam and Hyderabad, on which I had not an opportunity of making many observations. One or two points, however, deserve to be noticed, as the specimens collected in this part of the route are similar to those found north of Hyderabad as far as Nírmal, and throw some light on appearances on which important inferences have been too hastily founded.

* Asiatic Researches, vol. xviii.

At page 70, volume ii. of the Gleanings in Science, a desire is expressed by a gentleman at home, stated to be of high scientific acquirements, that specimens should be collected from the face of the hill of Beirwarah, where it has been cut through by the *Kistnah* river; and the author of the queries seems to be impressed with a belief, that a lake had formerly existed some way above it, towards Warapilly. The distance, however, between the Warapilly ghat and Beirwarah, is considerable; and I do not think, that there are any decided appearances at the former of the blue limestone of the clay-slate formation* having constituted the margin of a lake. The strata at the upper part of the rising ground to the north of the river are as hard as those lower in the valley, or on the opposite bank. A specimen of this rock, of a pure white color, and of great hardness, which I broke from the summit of the ascent above Warapilly, well known to travellers from the difficulty of riding over the large smooth slabs of marble, and which would have been admirably adapted for lithographic purposes, had it been free from minute crystals of quartz, was sent to you about three years ago by Captain Smith of the Madras Engineers. The junction of this rock with the granite to the north, could not be seen, the country being flat, and covered with low jungle. Jaspers and fragments of trap are found in the bed of the river, and the granite to the north is intersected by numerous dykes of greenstone, usually running from S. E. by E. to N. W. by W. To the south of the river, the country is lower, and for some way beyond the town of Dachapilly, the limestone, usually dipping slightly to the south, continues to be the surface rock; which, whenever I have met with it, on the Kistnah, at Cuddapah, near Auk, and the diamond mines of Banganapilly, and at Tarputrí in Bellary, or in the neighbourhood of the Wurdah, affords the best indications of success to experiments in boring; copious springs spontaneously rising from it, or being lost in the interstices between its nearly horizontal strata.

At Beirwarah, the river Kistnah appears to have cut a channel through the short ridge of hills, which terminates on either side in rather precipitous cliffs, and admits the stream into the great alluvial plains extending to the mouths of the Kistnah and Godavery. Above, the country has much the appearance of having once been an extensive lake, the bottom of which now forms the rich plain extending to Condapilly to the N. W., and Munglegherry to the south of the river. It

* I use this term of Dr. Voysey, but think its adoption more objectionable than argillaceous limestone, used by Colonel Cullen in the Madras Transactions. It would be better to characterise it as "blue limestone," "Cuddapah limestone," or other term involving no opinion as to its geological relations.

is probably here, that Captain HERBERT's correspondent observed that the "hardness and composition of the rock appeared to differ, according to the pressure they have been subjected to." I believe, that, specimens of the rocks of the bottom of the hill, have been sent to the Asiatic Society by Dr. BENZA, and that they are composed of the peculiar gneiss of the coast. Felspar is common, and some of the varieties possess considerable beauty. There are the remains of a rock pagoda cut in a mass of compact felspar, above the road, leading along the edge of the precipice over the river, portions of which have fallen, the natural fissures of the rock exposing it to this kind of decay. On the top of the hill the soft friable white rock, No. 2*, is found, and is carried away by the natives for the purpose of whitening the walls of their houses. It corresponds exactly with specimens from Vizagapatam, described as gneiss by HEYNE, and containing imperfect garnets. It is not, however, either its site as lying above other rocks, or its exposed situation, that has led to its decay, so much as the composition of the ridge where the edges of the strata rise to the south. The strata dip at a very considerable angle a little to the south of east. A careful survey of the hills from the summit shows, that they are short insulated ranges, such as are found over the Circars and other tracts, rising from a level country; and that had a lake existed in the plain above, every slight rise of the river would have carried its waters round their shoulders to the north and south. The rise in the line of bearing of the strata of the hill north of the river, and the appearance of that to the south, do not support the opinion that the lake was drained by the river deepening its channel. I do not know whether it can be supposed to derive any support from a tale told of the river god (*Krishna*) having induced the patron of the hill, who seems to be a form of *Shiva*, to permit him to get his head through, and that then he forced a passage. The granitic hills of Condapilly are seen a few miles to the N. W.; and in the midst of the plain, rising out of it like an island, are some great masses of hornblende rock, No. 6; and Dr. BENZA informs me that he saw dykes of the same kind of greenstone passing through the gneiss at Beirwarah. A mile and a half further on the road to Hyderabad is a quarry of granitic rock, devoid of hornblende, and containing only a very little felspar and a few scattered garnets. A little beyond this, the rocks assume the decided characters of the great granite formation of the Deccan, with which Dr. VOYSEY's papers have made your readers acquainted. The geological structure of the Circars is in nothing so peculiar, as in the extensive

* The numbers refer to specimens deposited in the Society's Cabinet.—ED.

distribution of the singular sandstone-like gneiss described by Heyne; and which, in hand specimens, it is often impossible to distinguish from the sandstone also found in many localities: and I do not know a more interesting subject of inquiry, than that of ascertaining whether this singular rock is metamorphic, and the sandstone altered by the intrusion of the great masses of porphyry so commonly found near these equivocal rocks, and by the numerous greenstone dykes and masses scattered over the whole of these districts. The diamond mines of Mulavelly are at no great distance from Condapilly, to the right of the road, situated in a basin between hills covered with jungle. The sides of which, one-third from the top, were found by Dr. W. Davidson to be strewed with a sandstone conglomerate; but he was prevented getting to the top by the approach of night. Fragments of this are found in the gravel, of which I believe specimens have already been sent to the Society, intermixed with much kankar: and from some pits in the valley, most of the lime used in the district is procured. The soil of the country on the Hyderabad Military road, after leaving the alluvial plain above Beirwarah, is formed of decomposed granite, but contains much lime. This admixture, and the kankar nodules, are probably of recent origin; as I observed, in a valley to the right of the road north of the hill fort of Yeralagundah, about 18 miles from Beirwarah, a stream trickling over granite rocks, and depositing lime on all the branches and rocks around. Some pieces of stone of considerable size have thus been formed, and recent specimens, containing remains of branches, or of grass, easily crumble to pieces, and are carried away by the stream. The source of the spring I was prevented from ascertaining, by the approach of night; and as an excuse for leaving this and other interesting circumstances unexplored, I must state, that being in Medical charge of the European regiment, during a sickly season, I could not command my own time of marching, or sufficient leisure.

The character of the granite of the Deccan continues well marked throughout the remaining part of the route to Hyderabad, and dykes and imbedded masses of a fine crystalline greenstone or hornblende rock of great hardness are frequently seen. These last have occasionally irregular shapes, and in one or two instances, that of the italic or other irregular curve; and near Secunderabad, they appear to be connected with the dykes, in the neighbourhood of which they are found. It was also frequently observed, that the various substances entering into the composition of the granite in the neighbourhood of these dykes or masses, formed very large and distinct crystals; and the imbedded greenstone, though often intimately united with the

granite, was in others more loosely connected, and easily separated by the progress of decomposition, leaving rounded cavities in the rock.

A circumstance of more importance, however, is the occurrence of the beds of kankar in this tract, being, as far as I have observed, always near some of the greenstone dykes or beds, and frequently under or intermingled with masses of granite, which is in a rapid state of decay: these are usually rounded, partly from the progress of decomposition, and sometimes from the tendency to concentric forms, which it occasionally undoubtedly assumes. The small detritus is in some places accumulated to a great depth, and it has been stated by Dr. Christie, that this debris is, at a considerable depth, again consolidated by pressure. In the Edinburgh Journal of Science, 1828-29, this is also mentioned as a fact, common to the rocks of other parts of India. With every respect for his authority, I cannot avoid the conviction, that the inference was founded on imperfect observation, and that it has since been employed in Europe, in support of an ill-founded theory.

No. 15, is " Mhurrum" or gravel found in deepening a well at Bolaram, (six miles from Secunderabad,) upwards of 50 feet deep, during the very dry season of 1832, and is not in the slightest degree consolidated. A loose block, which had resisted decomposition, was found above it, and contains mica, (No. 15,) a rare ingredient in the granite of Hyderabad. Much of the debris at Secunderabad is, however, consolidated by lime, which is seen to agglutinate the fragments, or to pass in vein-like lines or nodules through the gravel. Occasionally there are only a few fragments of quartz or felspar scattered through the kankar, or they appear to be inserted into the surface, as in No. 10, which is extremely hard. Generally, however, the agglutinated gravel is friable, and the cement less obvious. The debris is also sometimes united into pulverulent masses, by the oxidation of the iron contained in the sienite; but this takes place at the surface, and seldom acquires any great degree of hardness. Specimens of the granite in the neighbourhood of Hyderabad are numbered 14; and the appearance of the surface of that polished by the continual passage of hyenas, in the entrance of the caverns formed in the pile of gneiss or granite of the " Chítá hill," near the cantonment, has been described in the 1st volume of the Journal of the Asiatic Society, (No. 12.) The greenstone occasionally has distinct crystals of felspar scattered through it, without the porphyry thus formed, losing the remarkable degree of toughness possessed by the black rock; but, as observed by Sir H. Davy, the decomposition of the felspar is more rapid than of the other parts, (No. 19.) The greenstone is familiarly

known by the name of "black granite," and forms, when finely polished, the beautiful tombstones of the Golconda mausoleums, and the pillars of that in which Hyder and Tippu Sultan are deposited, at Seringapatam. The remarkable quartz veins in the neighbourhood of Hyderabad have been described by Voysey and Christie; it is therefore only necessary to mention, that they occasionally exhibit a more or less regular crystallization, and at the same time, acquire the fine tints of the amethyst. It is seldom that they are sufficiently regular and perfect for the purposes of the lapidary; such specimens were, however, discovered a few years ago, close to the European barracks, and at a little distance from a great greenstone dyke, but not in direct contact with the quartz bed containing the crystals, which, on the contrary, passes into the ordinary sienitic granite of the country. The colour of the amethystine quartz seems to be derived from magnetic iron ore, which is disseminated in grains both through the milky quartz and the granite, amongst which they are found, and has not been noticed elsewhere in the neighbourhood. The amethystine quartz was again met with 60 miles north of Secunderabad, near Bekanúrpettah, in loose masses, along with that variety of laterite found near Beder, and described by Voysey, and which is seen along the coasts of Malabar and at Boranghur in the Southern Concan resting on basalt. The rising ground on which they were found is composed of granite; but the country around is of a black trap soil, and numerous low flat ranges of basaltic hills are seen to the north, the east, and the west. A vein of white quartz is also met with as at Secunderabad, but the specimens differ, in containing irregular shaped geodes of agate, lined with crystals, or a red opake mamillary quartz, approaching to calcedony. The iron in these is usually imperfectly mixed with the quartz, and from the appearances above described, and the quartz having in several specimens been changed into a red jasper, the surrounding trap may be supposed to have altered the rocks. The colouring matter seems to have been afforded by the laterite, which is found in the neighbourhood apparently in dykes, and in contact with the quartz which intersects the granite: but there being no section, and the water-worn surface only being visible, no evidence could here be obtained, in support of any of the opinions entertained by geologists, relative to this singular formation. The amethysts are also found south of Janganapilly, and at Kamareddypettah, and Mr. W. Geddes met with them, of a greenish yellow tinge, south of Balcondah.

Granite Tract between Hyderabad and the Nirmul Hills.

The valleys and some plains about Bekanúrpettah are composed of black soil, mixed with calcedonies, &c.; and to the west of the road

are some flat hills, which I had not an opportunity of examining. They corresponded in their steep sides and flat summits with the trap hills to be presently described, and Mr. Geddes informed me, that they are formed of amygdaloidal trap, based on decaying granite. With these interruptions, the granite continues to Kamareddypettah, but the mamillary eminences, and the tors and logging stones formed from their decomposition, are of more rare occurrence. The granite, however, still continues to exhibit the lamellar structure, and is easily split into large slabs. In some instances, where the lamellæ are thin, the vertical fissures which frequently intersect them in right lines, and greatly assist the progress of decomposition, cause the rock to break into regular rhomboids. The last "tor stones" observed on the road to Nágpur were north of Jakrampilly, where they occurred on a lofty hill, on which there is a small pagoda. After leaving the basaltic hills near Bekanúrpettah and Jungampilly, black soil is seen in the valley below a large tank, and some dykes of greenstone pass the road in the direction of S. by E. to N. by W. at Kamareddypettah: the granite is lamellar white, with black mica and some hornblende, and fragments of amethystine quartz are scattered about. A little to the north of the town, on ascending a very gentle ascent, the red soil and granite give way to black soil, derived from decomposed trap rock, which is concentric on the top, but lower down is arranged in imperfect strata. On descending the hill to the north, the black soil conceals the granite for a short distance; but at the bottom of the hill, and in the bed of a small water-course, it is seen of the same appearance as before. Immediately beyond this, there is a very remarkable hill, which is seen from a considerable distance standing out from the gently indulating country, and possessing the peculiar form of the trap hills of the Deccan. It lies five miles north of Kamareddypettah, and four miles south of the village of Nugger, and is marked on the specimens as the "hill of Nugger." On approaching it by a very gradual ascent, the soil changes to black; and all at once the hill rises with nearly perpendicular sides, constituting a narrow ridge, about half a mile in length, and of a shape approaching to that of an Italic *f* running nearly N. by E. to S. by W. The hill is entirely formed of basalt, as its form had led me to expect. Above and in the body of the hill it has a concentric globular structure, the external layers of which are remarkably soft, and on the top of the hill resemble a peperino; lower down it is soft, of a greenish color, and soapy feel, (Nos. 66 and 69.) The nuclei left undecayed on the top, are exceedingly hard and tough, of a deep black colour, and contain large crystals of olivine, and small globules of calcedony. Many small but very characteristic specimens

of this last mentioned mineral, which had been imbedded between the concentric nodules, were picked up (No. 67). At the bottom of the hill, the basalt loses its concentric form, and occurs in tables or laminæ, having the appearance of having been subjected to violent forces. It sounds under the hammer when struck. Various specimens of the trap are much loaded with iron, sometimes in grains of a reddish brown colour; at others, it appears as if it had been partially smelted, and is not very different in its appearance from some examples of laterite. Much of the "kankar" that abounds in the soil is coloured with iron, while other portions are perfectly white; it is not, however, confined to the soil, as it was observed to have formed between two laminæ of the basalt, and by the gradual deposition of the lime, to have nearly broken up the upper stratum. From between some of the vertical fissures in the tables, and round the large rounded masses that occur in them, a formation of "kankar" projects in several places half a foot from the surface of the rock. It was evident, that the water loaded with lime, percolating through the alluvial black soil, or through the rock itself, gradually deposits the earth, where its accumulation is favoured by circumstances, of which the most important is the occurrence of an impervious rock or soil below that supplying the lime; and this explains the absence of organic remains in this recent formation, except where, in soils rich in lime, it forms round the roots of plants, and unites with itself, here and there, a fresh-water shell. No. 47, is a specimen illustrative of these views, taken from the south bank of the Godavery. The rock over which the river flows is granite, intersected by some great dykes of greenstone, (No. 44,) whose surface has a smooth metallic coating where washed by the stream. They project eight or ten feet, and are divided into numerous rhomboidal masses by fissures, into which lime has been deposited; and in the bed of the river, numerous fragments of calcedonies, zeolites, and other minerals found in volcanic rocks, are partially cemented by lime. The banks are mostly composed of black cotton soil, and the lower part is covered with small irregular loose slabs, resembling the dried cow-dung used for fire; which are found in situ projecting from the bank, and connected above with portions formed round the roots of plants, and below with other layers spread out between different strata of the alluvial earth.

From the top of the hill of Nugger above spoken of, numerous insulated hills, and short ranges of a similar form, are seen to rise from the granitic tract to the east and west, but they do not observe any particular line of bearing, although the whole group seems to pass in a direction from east to west, like the other basalt ranges of the

table land. From this hill to four or five miles north of Nírmul (a large town nine miles north of the Godavery) as in almost all other parts of the peninsula, is intersected by numerous greenstone dykes, which generally run from N. by W. to S. by E. These dykes are of great importance to the agriculture of the country, as the granitic soil is extremely thin and poor, except in the valleys, where the clay formed by the decomposed felspar accumulates, and bears fine crops of rice, for which water is collected in tanks, often in a great measure formed of natural mounds of rounded or angular fragments of greenstone, which is little subject to decomposition. At Jakrampilly, there is a remarkable dyke of this kind, which can be traced for several miles by a series of tanks on one side of it: it is also remarkable in exhibiting, where it rises into a small hill near the village, the gradual transition of the granite into the greenstone, and in the latter, having a tendency to split into regular forms. When once a fissure, however small, is formed, the rain washes a gradually increasing portion of lime and other soluble parts of its surface into the interstices, until the masses are separated, in which the alterations of temperature probably assist. It is difficult to account for the manner in which the greenstone passes into granite in this instance; but it is evident, that it has been raised by the granite above the continuation of the dyke at either end of the hill. I have been more minute in the description of the hill of Nugger, principally with the view of affording some information relative to the distinction of the basalt ridges, which have burst through the granite of the Deccan, from the greenstone dykes, which are of such frequent occurrence. The presence of olivine; the soft wacke in which the globular basalt is embedded; the less crystalline structure; the passage into amygdaloid containing calcedonies, zeolites, &c. and the granite in the neighbourhood of all the *smaller* masses of basalt, differing little from that at a distance, may perhaps be sufficient to distinguish these important rocks from each other. The separation of the different ingredients of the granite into large crystals, and the insulated masses of greenstone found in it near the dykes, prove, that the rock had been softened by heat; but judging from the appearance and great length of many of these dykes, I do not think that they were of contemporaneous formation with the rock through which they pass. Near one of these, at Secunderabad, a smooth, wall-like dyke of white granite passes through the sienite.

At Balcondah, 21 miles north of Jakrampilly, these dykes occur on the large scale, and the granite is much separated into its constituent parts, the felspar being of a fine red colour. Nine miles further north, in the bed of the Godavery, the felspar is of a still more beautiful red

colour; but good specimens could not be removed. Veins of quartz also occur at Balcondah, with turbid milky spots, as if altered by heat, and large imbedded crystals, (No. 42.)

** Síchel Hills; locally known as the Nírmul range.*

Nírmul is surrounded by granite hills, containing much hornblende and a little schorl; and the summits of some of them appear to resemble the greenstone of Jakrampilly, but they were not examined. After passing some small ranges of hills, the ascent of the Nírmul chain commences five or six miles north of the town, and the road continues amongst lofty hills covered with forest, by a succession of ascents and descents, for 40 miles, when it descends by the Muklegandy ghat to the town of Eidlábád, nearly on the level of the flat country of Berár.

The southern ascent of Nírmul ghat, is the most deep and difficult, the hills not rising in a series of terraces as they do to the north; yet it is not easy to ascertain the precise direction of the part of the hill range over which this pass leads, on account of the projecting spurs and low hills at their base, the thick forest with which it is covered, and from its having something of a curved form. The general direction is from W. N. W. to E. S. E., which corresponds with that of the Síchíl range, to which these hills belong, and which extends from the great lake water of Lonar to the neighbourhood of Mungapett, where the silicious fossil wood (marked "fossil wood," Mungapett), was found in 1828. On approaching the hills, the granite is observed to become soft, and to decompose rapidly. In the bed of a stream it has a remarkable concentric appearance, which was also observed in the centre of the hills south of Thitnoor, where it is covered by trap, on which fossils were found. No schistose rock was found here, but 20 miles to the east of Nírmul, and a few miles south of the mountains, hornblende slate occurs on the granite, and along with it the magnetic iron ore described by Voysey in the Journal of the Asiatic Society, vol. II. It is not a sand, as might be inferred from his description; but the grains of iron are either mixed with the hornblende or occur in a sandstone-looking gneiss, from which the hornblende had disappeared. Specimens of the rock, which I saw dug up, and of the sand formed by pounding it on protruding masses of granite, are forwarded. The softer pieces were at once reduced to powder, while the harder were first roasted; and the one was then easily separated by washing in small shelving hollows dug in the clay. It is then melted, and its quality said to be improved by using teak branches: the iron is soft, but part is used in the mixture from which wootz steel is formed. The strata of the schists have been broken and elevated, but the

* Also called "Shesha."

dip and direction are in no two places the same. Here also, the granite was seen, in the bed of a torrent, in thin concentric scales, not unlike the extremities of petrified trees, caused by the unequal waste of the component parts, the quartz projecting unaltered.

On approaching the hills, the soil gradually became black, with scattered fragments of calcedony; and at the first part of the ascent, which is for some distance very gradual, a singular fragment (No. 49) of semi-vitrified matter was met with, containing small white crystals of felspar. It could not be distinguished from a piece of granite fused in a steel furnace, with which it was compared by Dr. Voysey. At the same place there were fragments so much like iron slag, that till I found them in a large mass resembling a dyke, I supposed that they were the product of a furnace, (No. 49.) The granite continues the surface rock a little further, passing into a black hard basalt, intermixed with many white spots, apparently of felspar; but I saw none of them rounded or distinctly crystallized, forming amygdaloid or greenstone porphyry, such as occur at the lower part of the pass leading to Eidlábad. On ascending the last part of the base of the hills, the surface was strewed with calcedonies, quartz, (No. 52) and other minerals of the same family, and amongst them, a few fragments of a softish white clayey and silicious stone, containing small shells of fresh water families. The trap then became softer, more vesicular with calcedonies, zoolites, &c. imbedded, and the surface covered with tabular crystals of the same kind as those so remarkable in the Poonah trap rocks; and latterly concentric, the external layers decomposing, and the nucleus lying in a soft greenish wacke. I spent several hours in ascending the highest points of the range, but was unable to discover any beds of fossil shells; large blocks of quartz were, however, observed, with a singularly angular surface, and sometimes with fine capillary crystals, much of which was found with the fossil fragments; and afterwards, in the same position and partaking of the characters of the fossiliferous masses found in sitû. These blocks were seen extending along the steep face of the hill at the same level as if they had been forced out of the mountain, or rather, as if the basalt, when erupted, had covered, and partially melted the bed on which it lay, and thus caused the singular appearance of those blocks. The highest summit east of the pass is caped by some horizontal strata, having some resemblance to sandstone that had been altered and blackened by heat; what its real nature was, I could not determine.

The hills, for 44 miles by the road, are arranged in terraces with steep sides and flat summits, rising now and then into conical elevations, with rounded or flat tops, and inclosing narrow valleys, abounding

in streams, or small table lands with water every where near the surface. On some of the ridges, the globular basalt becomes columnar, near which no trace of fossils, and hardly any calcedonies have been found. A thick wood and grass jungle, composed of very different plants from those most common on the granite hills, cover the whole tract, and render it unhealthy for the greater part of the year. In a deep valley, about the middle of the hills, where the Kurm or Kurrum river passes through them, the basalt is seen to rest on friable granite, (as near Nírmul to the south and Eidlábad to the north, and at one or two other places,) and a level plain of considerable extent and deep black colour extends to Etchoda to the neighbourhood of the shelly rock. The fossils were first found at Munoor, and between that village and Thitnoor, which is near the top of tbe Maklegandy ghaut. The most remarkable were found in the beautiful grey chert*, which either projects from the basalt in which it is imbedded, or rests in large blocks on the surface. The side on which they rest is remarkably smooth and even, while the others are rough and covered with bivalve shells of great size, and some of them having the epidermis still entire, resembling a recent bed of shells on the sea shore. A few univalves also occur converted into flint, and it is remarkable, that one small bivalve, thus altered, retains its colours. The masses are evidently in sitû, and have probably been consolidated by the basalt, with which they are surrounded, or on which they rest. Some specimens exhibit a mixture of sand and mud, merely slightly agglutinated and intermixed with fragments of shells; the greater part is converted into chert spotted with fragments, or containing the shells in a perfect state; in other places, the materials have arranged themselves into an enamel-like substance around irregular cavities containing fine crystals of purplish quartz, and in one specimen a formation of calcspar bas taken place. Throughout the rock perfect bivalve shells, both closed or open, occur in the situation in which they had lived and been entombed. The most perfect are closed, and some of them are easily separated from the rock to which they are slightly united at a few points only; they are filled with the stone, mixed with fragments of minute shells, and some are entirely converted into chert, which retains the form even of the ligaments so completely as almost to lead one to expect to be able to open them.

Between Munoor and Thitnoor, masses of red chert project from amongst the basalt, and contain various shells, mostly univalves of small size, and some of them evidently belonging to fresh water genera. Near to these many fragments of different kinds were found

* See labels on specimens.

lying loose on the surface, and abounding in shells of various families. (See specimens.) Those in the green crystalline mass, resembling an ore of copper, were in many instances converted into quartz crystals, retaining the perfect form of the shells; one of these of exquisite beauty, which has been unfortunately broken, was found in the interior of a larger one: others were imbedded in a tough white clay rock, so soft as to soil the fingers. The greatest part consisted of a siliceous rock, partly converted into a black bituminous flint, or a coarse quartz, partially altered into calcedony, into which the majority of the shells were converted. Some, on the contrary, retained the structure of the shell unaltered, and effervesced with acids.

Amongst these, the fragments containing the fossil seeds of chara, associated with fresh-water shells, were found. The gyrgonites were not observed at the time the specimen was found, but the rock to which it belonged could not be far distant, as the shells are of the same species as in other specimens, having a similar mineralogical structure. In other fragments, remains of grasses appearing half consumed were seen; and in the large protruding mass of red chert, containing shells converted into calcedony, I discovered what I take to be the tooth of an herbivorous quadruped. A few of the shells I believe to be marine, and at the distance of half a mile, the principal masses of grey chert, containing the large marine shells, were found.

On descending towards Thitnoor, granite is seen at one place, and above, much quartz, having a slag-like surface of the kind seen above Nírmul occurs. A few specimens of black chert, with shells, were picked up in the bed of a nulla at Thitnoor, where it was also found in sitû. A loose piece of reddish and green flint, with shells, was also met with in a ravine three miles further north. Much lime and kankar was here mixed with the black soil, or was deposited in the water-courses; the greater part probably derived from the decomposed basalt, or from such layers of a soft white limestone, as were found between the laminæ of basalt, in digging pits to obtain water for the troops, when encamped at Etchoda. A compact stratified limestone, however, occurs in the vicinity.

The pass from Thitnoor, called the Muklegandy ghat, is formed of several terraces, of which three only are remarkable, and a steep descent between each. The surface rock of the second terrace is a rough, white limestone, which appeared to be consolidated in nodules, until it was broken, and found to consist of a great variety of shells, many of great size, but difficult to remove entire, forming a rock of a crystalline texture. The strata are horizontal, and in one place, where it is cut through by a torrent, the rock is 12 feet thick, and *is seen to*

rest directly on granite of a reddish color. The shells are of very various forms: several belong to the genus Ostrea of Linnæus; one very perfect Cardia was entire, both valves being connected, and one fragment, of a very large shell, has the water-worn appearance often seen on the sea-shore. The edges of the large shells are harder than the rest of the rock, and stand out from it, which has led the natives to compare its surface to the impression left by the feet of sheep, and to name it "Bakrí ke páun ká patthar." Over the surface, many fragments of basalt, calcedonies, &c. are scattered, derived from a lofty spur of the higher point of the mountain, which rises precipitously from the terrace within a few hundred feet of the fossil strata. A very remarkable mass of soft peperino, resembling ashes, of which a specimen is forwarded, seemed to proceed from the limestone, where it begins to be lost amongst the debris of the mountain; and amongst the loose fragments, were some very tough clayey stones, having the forms of small univalve shells adhering and embedded.

The facts above described, and the nature of the different fossil beds, more especially this great accumulation of marine shells *resting immediately on granite*, and the fossil seeds of charæ, now perhaps first found in India, leave no doubt on my mind, that this wild mountain country, now covered with a dense forest, had once been the bed of an inland sea or great estuary, on whose shore the charæ and associated fresh-water shells had flourished.

On descending the pass towards Eidlábád, the rock changes to amygdaloidal trap, with occasional masses of greenstone porphyry, having large crystals of felspar imbedded. The opake milk-white quartz, and the beautiful white porous crystalline mineral, which accompany the fossils, were found here, and were not met with elsewhere. At the foot of the pass, granite re-appears, and protrudes in great masses from the soil, for about four miles on either side of the town of Eidlábád*.

Basaltic Tract between Eidlábád and Nágpur.

The greater variety of rocks that occur between Eidlábád and Nágpur, and the interesting appearances they exhibit, will render it necessary to enter somewhat more into detail in describing the localities whence the specimens were collected; so as to afford the means of determining their relations to each other, and to the fossil deposits already described; as well as to the great western trap formation, and the stratified rocks to the north and south.

* The localities of some other minerals found in the Nírmul hills are marked on the specimens. The blood-red chert found in the valley of Ankní is remarkable.

The bed of the small river of Eidlábád (see map) is covered by numerous fragments of the argillaceous blue limestone, so well known as underlying the diamond breccia in the Cuddapah district south of the *Kistnah*. Three miles higher up, the stream runs over the slightly inclined strata of a fine white sandstone, having some quartz fragments imbedded, rising towards some lofty ranges of trap formation to the east, (the Manik-gurh hills*,) and are some places converted into a quartz-like mass, as is seen in some of the Cuddapah sandstones. It probably rests on the blue limestone, which is seen to pass into a soft bluish or reddish clayslate in the bank of a stream a few miles north.

About 10 miles N. of Eidlábád, the limestone is found on the surface, forming smooth slabs, having much calcareous spar and rock crystal between the strata, and in their veins through the rock, and in the course of the natural figures, numerous small round perforations are arranged in lines, and occasionally filled with soft calcareous matter. On a rising ground south of Zeynád, the marble had occasionally a dip of 40 degrees; but for the most part it was nearly horizontal, and the direction of the dip was quite irregular. In the nala of Zeynád, which runs over limestone, there is much tuff, having small pieces of the limestone imbedded, and evidently formed from the water of the stream (specimens No. 85); a similar formation is, however, found in a few places on the high level ground to the S. W. To the east of the village a gently rising ground extends nearly N. E. and S. W. for about three miles, and terminates in a small hill, which rises rather abruptly. The slope is formed of nearly horizontal slabs of marble, the edges of the strata being exposed by the gradual rise of the surface. In following the ridge to within half a mile of the little hill to which it rises, a singular appearance presented itself: a dyke of perfectly vertical stratification, about three feet in thickness, projects two feet from the general surface; its exterior is singularly irregular and altered, the constituents of the rock being formed into crystalline or flint-like minerals of lime, argil, or silex, while the internal structure retains the characters of the blue limestone. On following this natural wall for about half a mile, it is concealed by globular basalt, which has burst through the strata, and in forming the termination of the little ridge, has covered the surrounding limestone, of which a portion has been so singularly displaced. The basalt is vesicular, and resembles much of that found in the Nírmul hills. No fossils were found here; but in the ascent from the second terrace of the Muklegandy ghát, where the great bed of marine shells was incumbent on granite, the same limestone was seen

* The Manik-gurh hills run from N. by E. to S. by W. almost at right angles to the Nírmul range.

in situ, greatly broken up by the eruption of the precipitous trap ridge, on which it was seen. The thickness of the grass and wood jungle prevented its being traced with sufficient accuracy. Fragments of the same rock were also seen at Thitnoor; and a very similar rock was observed in horizontal strata at Muneer, not far from some great blocks, containing marine fossils, in one specimen of which small univalve shells were found. But as this locality was only examined by torch light, I could form no judgment as to the formation being the same; although the total absence of fossils in the blue limestone, over extensive tracts in which I have searched for them, incline me to think that they are different.

The relative age of the blue limestone and great trap formation, to which these hills belong, being ascertained by these and other facts; it may be hoped, that a careful comparison of the fossils will assist in determining the period to which other rocks occurring to the north and south belong. I have not been able to detect amongst them any of the Himálaya fossils; but some fragments found in indurated clay at Jirpoh, near the hot springs in the valley of the Nerbada, and in a specimen from the Gawilgurh fossil rock, described by Dr. Voysey in the 18th vol. of the As. Res. appear to belong to some of the same shells.

The march to the Payngunga river is over a flat country of black soil, modified in some places by a mixture of earth derived from slate clay, which appears occasionally at the surface, and of the same kind as that found below the limestone of Cuddapah, or which takes its place under the diamond breccia of Banganapilly. Jaspers, striped red and white, are found in the black soil. Scattered over this extensive plain are a number of small conical hillocks of white kankar, apparently formed by springs issuing from the centre, and now dried up: in some of them the apex is a little depressed. Several long straight ranges are seen at a distance, generally flat on the summits, but occasionally rising into cones, with a lengthened base, corresponding to the direction of the hills. About half up the greatest height a remarkable line extends all along, on which the summits appear to rise as on a terrace, or like the parallel roads of Glen Roy.

The pebbles of the Payngunga are principally calcedonies of a reddish color and the blue limestone. No. 93 is a specimen of the calcareous sandy tuff from the banks of this fine river; it is found as high as 25 feet above the water at the fort; and is always horizontal, with black soil between the layers, which are from an inch to three feet thick. The surface is irregular, but seldom or ever shoots into branches like the tuffa of the Godavery, and holes occasionally occur in

the layers, from a deficiency of lime; in other places, it projects three or four feet, in consequence of the soft soil being washed away. In one of the specimens, numerous recent shells are imbedded, which correspond in situation to a layer of these left in the sand by the last fall of the river; and it is evident, that the tuffa is formed from the infiltration of the lime with which the black soil and the water of the river abound, into layers of sand. In all these rivers, and in the stream of Bibbery and others running into the Godavery above Badrachellam, beds of limestone conglomerate, cementing agates and calcedonies, are continually forming.

The country between the Payngunga and Kair *has at all seasons* many springs and streams of pure water; which give a lively and beautiful green to the vegetation, when the surrounding country is burned up by the scorching heats of May*. The first of these streams is at Lingtee, the water of which is loaded with lime, which it deposits on its bed in a thick incrustation of tuff. Loose pieces of branches, petrified by lime, were found on the banks, and a wall of kankar six feet high in contact with No. 95, seemed to have been formed from a spring which had gushed from a fissure in the blue limestone, which is here the surface rock, and rests on a reddish, very friable slate clay, as is seen in a section a mile further down the stream. The black flint, No. 96, resembling anthracite, was found higher up. This stream, which, in the driest weather, has sufficient water to drive a mill, is said to have its source about six miles distant in a low range of hills, over which the road passes more to the east, a little to the north of Urjuna, and three and a half miles from Lingtee. At this village, a small stream takes its rise in a hot spring, whose temperature, as it gushes from beneath the wall of a half ruined reservoir was, in December, 1833, almost 87°. Copious springs also rise in the bed of the little stream; and globules of gas are extricated from round holes in the mud; but on endeavouring to collect a quantity, it was found that there were considerable and irregular intervals between each jet of air, nor did it always issue from the same place. The springs rise through the blue limestone so often mentioned, which, in a section in the north bank, is seen to have been raised by some violent forces, in a very singular manner, so as to form a series of irregular piked gothic arches, overlaid by partially broken but horizontal strata. The spaces within the arches are filled with fragments of the same rock, all evidently forced from below. The bed of the stream has a covering of sand,

* The same was observed of the beautiful stream at Bibbery, in the month of May, 1828, and inclines me to think, that it derives its source in springs like those of Kair, to be presently described. It rises in the Nírmul range.

which, some way below, is agglutinated by lime into a tolerably hard rock. The sand is derived from a quartoze sandstone, which crops out in two or three places from the ascent south of the spring. The strata are not horizontal, but neither the dip nor line of bearing could be observed.

North of Urjuna the rock is concealed by the soil as far as the Pindee ghat, nearly a mile distant, which passes over the steep low range, in which the Lingtee nulla rises. Its top is rounded, but on either hand, several conical summits are seen outlying from the range, which extends for some way from N. W. to S. E. On leaving the plain of Urjuna, the blue limestone disappears, and the hill is found to be composed of the usual black concentric basalt, the nuclei of which are exceedingly hard, and contain much olivine : they are imbedded in a soft grey or greenish wacken. I was surprised to find the road and a ravine descending from the hill strewed with the limestone I had left below, and did not quite credit the guide, who pointed to the top of the hill as the locality from which they came. I, however, soon came to it in sitû, in its characteristic large smooth slabs, which render it so difficult to pass on horseback. They were observed to be slightly convex upwards, to be very much fissured in various directions, and if taken in the mass, to have a slight anticlinal dip, although on the top the slabs were horizontal and several places remarkably altered, as if they had been half fused ; the argillaceous and siliceous matters having arranged themselves into beautiful streaks of a pale blue enamel, passing into calcedony, or crystallized in minute prisms. Some parts of these strata had acquired a deep black color, and a flinty hardness. On descending the hill on the opposite side, the same appearances presented themselves, and left no doubt of the limestone having been raised from its connections by the intrusion of the basalt, which had slightly bent the strata, and in doing so, had caused the numerous fissures, and the alteration of structure. North of the Pindee ghat, there are a number of very low rising grounds, flat on the top, and composed of black globular trap rocks : and on the valleys, many large coarse masses of calcedony are scattered ; of which, on a slight examination, I saw none in the hills. Near this, the limestone, No. 97, was found in the bed of a nulla. A little further on, there are two very black conical hills of trap, and at their feet, great fragments of rock crystal, but of no beauty, and having cavities lined with calcedony. From hence to Kair, the country is more level, rising however a little, to the right of the road ; and four miles from the Pindee ghat, and the same distance from Kair, I found the sandstone, Nos. 99 and 100. It was only seen in a small nulla where its strata appeared

to be horizontal, and was white, red, or of a fine yellow, easily decomposed, and having small metallic veins passing through its substance, No. 100, and in one or two places, passed into a breccia, cemented by lime. No other rock is found at a higher level. I had been induced to examine this extensive slope, as the occurrence of the blue limestone suggested the probability of a sandstone or breccia being found above it, as at Cuddapah, before I discovered the sandstone at Urjuna, and near Eidlábád; I was therefore much gratified by finding it, although different in mineralogical characters. The country did not afford any section, but the sandstone probably rests on the blue limestone, which is met with at a lower level, two miles to the north-east. A mile and a half south of Kair*, the road crosses a small river, where there are some masses of travertine several yards square, which have been carried down by the stream: they are entirely composed of petrified branches and leaves, with a cement in some parts of considerable thickness, and more or less crystalline, or resembling kankar.

The stream rises near the town in copious hot springs, whose water is considered to be exceedingly pure and delicious; but when taken from one of the springs, where it can be directly received, was found to be acid to the taste, and, on boiling, deposited lime, which the carbonic acid had held in solution. Bubbles of gas are also extricated with the water, from one of the springs. The lime separates in its course, giving a whitish appearance to the water of the pools, while it sparkles near the springs and in the rapids, as was the case also at Lingtí. The temperature of the spring, in 1831 and 1833, was 87° and is the same in May, June, and December; but the difference to the feelings, according to the temperature of the air, is so great, as to have led to the belief that it is cold in the day and hot at night; the thermometer, however, showed that it was the same at 3 P. M. and 5 A. M. of the 5th June, when that of the air was 100° and 81°. The principal spring rises at the root of a great Banian tree below the pagoda, and is stated by the devotees to flow in the same profusion the whole year, which they account for by saying that it flows from the Ganges at Benares. This and other springs form a stream, that increases as its course is followed downwards, notwithstanding that much is directed to gardens, and a fine sheet of paddy in the bend of the river thus formed. About half a mile below the spring, the first formation of rock is found crossing the stream like a dyke, but of considerable breadth; others more remarkable are found lower down, and after a winding course of $2\frac{1}{2}$ miles, it seems to cease. The congeries of branches, roots, and even

* This small town must not be confounded with a large place of the same name on the Godavery.

trees, sometimes hollow, and always in concentric rings of deposit, forms a beautiful sight when in masses of several tons weight. The strata were seen in one place to be 12 feet thick, and to rest on the common black alluvial soil ; near this, it had filled the original bed of the stream, and forced it to find another channel : and in two places, a fall of three or four feet, forming a pretty cascade, seemed to be occasioned by the growth of the rock, and the wearing away of the channel below. The deposit often conceals the remains of plants, with a smooth coating of considerable thickness and firmness, frequently rounded in irregular sections of large circles ; in others, in nodulous forms of great beauty, covering over the extremities of the smaller or larger branches, and occasionally preserving the wood in an hermetically-sealed cavity. The roots of the Banian now and then pass into the empty tubes, as if they were the mould on which they are formed ; others probably form on the weeds, which flourish in the wildest luxuriance along the banks : one of these I found to be 24 feet in height. Recent shells, such as now inhabit the stream, were found in many places enveloped in the stone. One fine specimen of *lymnæa* was attached to the side of the rock, as if it had been arrested there by the deposit of stone around it, and which has taken its shape ; its fine surface, where it adhered, being that of the fresh shell ; while the coating exhibited the color and fracture of the tuffa of the hillocks south of the Payngunga, and others exactly similar, near the town of Kair. Roots and branches were seen to lie in the deep water without a coating of stone ; but the series of observations so accurately described by Mr. Lyell was completed, by finding where the stream fell over some rocks, a plant still living, whose roots were thickly interwoven, and the leaves on a level, and just above the water, cemented into a mass of firm white tuffa. (Specimens of the water and tuffa were formerly sent.)

The spray seemed, therefore, to produce the deposit more quickly ; but specimens of moss growing below the water were also converted into sharp brittle spiculæ.

Below, some blocks were softened, and as if in part redissolved. Amongst the petrified plants, one tree $1\frac{1}{2}$ foot in diameter was seen : and also a few leaves ; but these were rare, I suppose from their rapid decay and smooth surface ; one of them seemed to belong to a species of lotus seen in a pool above, and another seemed to be the leaf of aloe. In some places the tuffa was sandy, and in one or two slightly tinged with iron ; some of it had a fine crystalline appearance, and considerable hardness ; while other specimens could not be distinguished from kankar. A tendency to the formation of a bluish white scum was observed on the surface of the still water, both here and at Lingtee : a slight

smell resembling sulphur was also occasionally perceived ; and at the latter, our people procured water of a very offensive taste, although perfectly clear, from a well which I did not see.

The water abounds with animal life, and the banks are covered with a profuse vegetation, amongst which many fine insects were seen ; and in the hot season, all forms of life seem to gather round this oasis in the black burned-up country around. The banks and water affording so much food, vast numbers of birds of different species, game, doves, kings-fishers, herons, &c. are collected together, whose habits a naturalist might spend months in observing, without exhausting the field of inquiry.

All the springs seemed to be equally loaded with calcareous matter, and similar formations by springs now closed up are seen on a rising ground down the river. Here too, the globular trap again appeared on the surface in several places, of small extent ; one was a little to the west of the greatest formation of travertine, and another below the ford where the hard nuclei were surrounded by layers of a grey friable wacke like that of the Nírmul hills, and are curiously divided into compartments by tuffaceous partitions. Near to this, the blue limestone is again found in extensive slabs, slightly raised from its horizontal position ; but as usual in no regular direction, the strata occasionally meeting each other at an obtuse angle. The same remark applies to the rock as seen to the north of the springs on the road to Won, and to almost every other place where I have met with it. Near the last mentioned bed of basalt, some irregularly inclined strata of blue rock, having a granular sandstone-like aspect, were seen, and at no great distance, large loose masses of vesicular scoriæ were found, (specimens Nos. 109, 115.)

But the most interesting appearances are seen, in a small irregular rising ground, above the pagoda at the principal spring, which will be best understood by an inspection of the specimens 104. The basis of the rock is a tough white limestone, projecting from the gentle rising ground in very irregular masses, passing into curious and beautiful jasperous minerals, often coated with minute rock and other crystals ; and the whole is perforated by large cavities, and even holes, evidently formed when the rock had been erupted in a semifluid state. Much tuffa is associated with these altered rocks, filling up many of the cavities, and having various minerals imbedded. I believe that few places exhibit so many of the most interesting effects of volcanic action, as the small district around Kair ; more especially in altering a stratified rock of apparently uniform structure, so as to form a great variety of mine-

rals*. A good deal of sandstone has been used in the old buildings, which the inhabitants stated to be brought from Sacra, five miles to the west.

To the north of Kair, the limestone resumes its blue color; the soil is black, and a little further on, mixed with calcedonies, &c. In the nulla at Won, quartz sand, sandstone, and a mineral resembling pudding-stone were picked up; and at the foot of the hill, the remarkable vegetable fossil figured in the fifth number of the Madras Journal, and now deposited in the museum of the Bengal Society. The small hill of Won is composed of sandstone of different colors, red, white, and yellow, and waved lines of a black color from disseminated iron, pass through it in various directions—the composition of which is the same as that in which the fossil is contained, and No. 100, from between Urjuna and Kair. The strata have been elevated by the convulsions to which the rest of the district has been subjected, and have a dip from the apex of the hill, varying from 35 to 55 degrees: their direction on the southern face of the hill, is nearly from E. to W., but to the west they turn off towards the rising ground on which the town is situated, the line of bearing of the strata being from S. E. to N. W. The swell of the hill extends some way to the east, but the country is on the whole level. This sandstone is also found to the eastward in the basin of the Wurdah and Godavery, beyond Chanda.

Sand derived from these rocks forms the soil for two miles north of Won: between that and the Wurdah, it consists of the basaltic black soil, and the gravel of that river is composed of calcedonies, agates, &c. of which a calcareous conglomerate, in horizontal strata, two or three feet thick, has been formed, No. 123.

At Waronah, white sandstone and a yellow slate, apparently belonging to the clay slate formation to which Voysey refers the blue limestone, is used in building; and one obtained from a hill five miles distant, which I had not time to visit. Most of the pagodas between Hingan ghat and Chanda are built of the same materials. Between Waronah and Chiknee the country is level, well cultivated, and the water within a few feet of the surface; much fever prevails after the rains, although there is no wood or marsh. Basalt protrudes from the level soil, and near it, the bed of a small nulla displays strangely altered strata of the red slate clay, seen at Lingtee, which is broken up, and intermixed with crystalline nodules and layers of calcareous

* In some specimens, the surface has the appearance of a semifused brick, which had assumed something of a regular arrangement, whilst the centre is composed of the blue limestone little altered.

spar, having a red clay in the interstices. The specimen (No. R. 5) gives an imperfect idea of the singular appearance of this rock. At Dyeghám, two miles further north, and about the same distance south from Chiknee, it is seen dipping to the west of south at a considerable angle, is much fissured, and is reticulated with beautiful veins of calcareous spar, filling up the vertical interstices, which vary from a line to half an inch in breadth ; they intersect each other in all directions without disturbance, and were evidently formed at one time.

To the east of this, and of the village of Chiknee, there is a very gentle rise of the country, and concentric basalt and great round trap boulders are seen wherever the soil has been removed. On this are found numerous great blocks of indurated clay, of remarkable hardness, and exhibiting all the varieties of that mineral, of flinty slate, of compact schist, and of semi-opal*. Many of these masses are also found imbedded in the basalt; and on a very careful examination, the inference could not be avoided, that they owed their different appearances to the greater or less heat to which they had been exposed. Most of them are full of large and small univalve shells, many of which are of fresh-water genera. Many of the shells are changed into opal, others are covered, or their shape taken and preserved by quartz crystals; while the shells of a few can be separated unaltered, and effervesce with aids. The spines of the small shells are often insulated in cavities in the rock, and their crystalline surface is often very beautiful, when examined with the microscope. Some vertebræ and the head of a fish were met with ; but from the great toughness of the rock, part only could be broken off, and a portion of the same block was converted into a red flint, with shells changed into opal. A large loose block of a slaty structure was found near this, containing fragments of very large bivalve shells of great thickness, along with wood converted into a black flint, intersected by fine veins of a light purple opal; and other bivalves which had been crushed together, were found in a flinty state on the upper part of the rising ground. I do not think that I go beyond the limits of correct inference, in supposing these shells to have lived in a mud formed from the decomposition of the clay-slate found in the neighbourhood, and through which the trap is seen to have burst†.

* Loose specimens of this rock was seen by Mr. W. Geddes, Surgeon of the Madras European Regiment, in 1829, who directed my attention to ascertain their position.

† Shells were first found here by Mr. W. Geddes, late of the Madras Medical Establishment.

The country to Naugri continues to be composed of basalt, which is in some places tabular, with green earth between the laminæ; and the soil is covered with calcedonies, ribbon and pudding stone, jaspers, resembling those found in the Nírmul hills, to which the whole character of the formation remarkably assimilates, and leaves no doubt of their belonging to one great period of protrusive violence.

At Naugri, fossils like those of Chiknee are formed; and with the conical masses of calcedony, having a smooth flat base of cachelong, the centre being filled with quartz crystals and calc spar; which were afterwards seen in sitû at Hingan ghat, inserted between the globular basalt with the apex downwards, the peculiar appearance of the base being perhaps caused by slow cooling.

At Hingan ghat, a number of blocks, loose, of a black and red chert, containing silicified branches of dicotolydonous trees, and a very perfect portion of a palm (date?) tree were discovered: and the same kind of rock, but without fossils, protruded from the basalt a little below Colonel Lambton's tomb. The basalt was globular, but seems to have had a tendency to form five or six-sided prisms. The rest of the route to Nágpoor is over a level country, from which a few insulated trap hills rise abruptly, on whose summits basaltic columns are occasionally met with. On the south side of the small range of hills near the city, these columns are very regular, and inclined to the south, at an angle of 45°, in consequence of which many of them have fallen. The flat top of the hill forms a pavement of the ends of similar columns perpendicular to the horizon. The round flat topped hill of Sitabuldee, which is accurately described by Voysey in the 18th volume of the As. Rs. is separated a few hundred yards from the extremity of this range, and rests on a decomposing granitic rock; its great and irregular masses show a similar tendency to crystalline arrangement, and thin sheets of calcedony are found in the joints.

To connect these observations with those published in the As. Researches and Journal, on the countries south of the Nerbada, it is necessary to mention, that at the cantonment of Kampty, eight miles north of Nágpoor, the sandstone is met with in the north bank of the Kanan river; and a mile higher up, the granite has been forced through the strata, bending or converting them into quartz rock. The crystals of felspar and plates of mica are remarkably large, and mica slate is seen in a quarry a few hundred yards distant. Beyond this are some small hills of upraised gneiss; near to which a conical hill of curiously altered rock, resembling that above the hot springs of Kair, has burst through a limestone, which it appears to have converted into a fine crystalline bed, like that found in the primitive districts of Scotland.

From the summit of this volcanic rock the basaltic hill of Sitabuldee and others are seen to the south and west; and at the same distance to the north, the rounded mica slate and granitic hills of Ramtesk, which extend into the Bengal territory south of Ságur.

An examination of the map will impress more strongly, than any thing I can urge, the importance of examining the whole Sichel or Shesha range, from the great lake water of Lonar, (to which the attention of your readers was called in the number of Journal for June, 1834,) to the fossil beds of the Nírmul hills; and from thence to Bibbery, the fossiliferous localities above Mungapett, and the hot springs of Byorah and Badrachellam. Other hot springs are also said to be found in the Nírmul range, regarding which I could get no correct information.

There are three other points to which it may be well to call the attention of such of your readers as may have an opportunity of visiting these localities.

1*st*. Whether the Sichel hills really terminate about Mungapett, or are continued in broken ranges towards Rajamundry? I have long considered it probable that the dykes so common in the Circars are connected with the great basaltic ranges which cross the Deccan in nearly the same direction; and Dr. Benza has recently discovered a bed of marine fossils on the top of a basaltic hill five miles south of Rajamundry, and a little above the alluvial plains of the mouths of the Godavery.

2*nd*. Whether the basaltic hills near the Manjerah river, on which Dr. Voysey discovered fossils, are connected with those of Bekanurpettah and Nugger above described; and whether they belong to the same geological period as the Nírmul hills?

3*rd*. I entertain little doubt that the basaltic formation of the valley of Berar and the basin of the Panah river, which falls into the Tapti, belongs to the period of eruption which elevated the Nírmul fossils from the bed of the sea; before, however, coming to this conclusion, with reference to the northern part of the valley, the connection between the localities of the Nírmul and Chiknee fossils with those of the Gawilgurh hills (A. R. vol. 17th) must be ascertained.

4*th*. The exact relations of the crater of Lonar to the great volcanic district to the N. W. where fossils have not yet been met with.

But as the difficulties opposed to the investigation of the greater part of such wild and unhealthy tracts will probably prevent these desiderata being soon supplied; I hope that a sufficient number of organic remains have been obtained from the central point of the district, to enable an experienced geologist to arrive at a tolerably correct esti-

mate of the relative age of part of the great trap formation of the N. W. of India, which the President of the Geological Society in the anniversary address to that body in 1833, stated to be quite unknown: "no vestiges of secondary or tertiary formations having been detected within the region described."

IV.—*Description of a New Species of Columba.* *By* B. H. Hodgson, *Esq. Resident in Nèpál.*

The following description of a new species was originally sent to the Society six years ago, but it does not appear to have been published. It has since been described as new by the Zoological Society in 1832. With the description went a drawing, coloured, and large as nature. Owing to the tardy appearance of the Society's quarto volume, the papers that did appear there had been forestalled: thus red-billed Erolia, but also my Circæetus Nipalensis, take precedence, by *two years*, of Gould's *Ibidorhyncha Struthersii* and his *Hæmatornis Undulatus*, which are the same species under new names. Both birds are types of new genera: see the Journal of the Zoological Society under date Dec. 27th, 1831, quoted, pp. 170 and 174. I described them *both* two years and some months previously: as the dates of the papers and the proceedings of your Society can prove*.

Order Rasores. *Family*, Columbidæ. Genus *Columba*. Species new.

Columba Nipalensis, (mihi.)

This elegant species is found in the woods of the valley of Nèpál. It is seen exclusively in the wild state, and is very shy, seldom or never entering the cultivated fields for the purpose of feeding, but adhering almost always to the woods, and living upon their produce, in the shape of grass, seeds, and berries.

Except in the breeding season, it is very gregarious, and it breeds, I am told, only once a year, laying its eggs in June and July. I cannot bring it exactly under any of the *ABCDarian*† allotments of the numer-

* We can offer no further explanation of the loss of the author's MS. than was before given (J. A. S. IV.) neither can we find the plate to which he alludes. But we take this opportunity of circulating a lithograph of the Erolia and bearded Vulture described in vol. IV., which may serve as a peace offering to the justly offended author.—Ed.

† A. orbits and tarsi plumose.
B. orbits plumose, tarsi naked, tail even.
C. orbits plumose, tarsi naked, tail wedged.
D. orbits naked.
a. feathers of the neck and quills simple.
b. feathers of the neck notched at tips.
c. quills bifid at tips.

ous species of this genus, according to the specification of those allotments in the 14th vol. of Shaw's Zoology, as will be perceived by the following enumeration of characteristic particulars.

There is a naked space round the eyes. Two-thirds of the tarsi are plumose, the remaining third only being naked, and the toes also are naked. The quills are simple at their tips. The feathers of the neck are sub-elongated and acuminated at their tips. The tail is even.

In an earlier vol. of Shaw, the Abcdarian division of the species is not carried so far as in the vol. just mentioned: and the following disposition of species, to be found in vol. xi. p. 2, of that work, has at least nothing inconsistent with the enumeration of significant particulars above given in reference to our bird.

A. tail equal.

a. orbits naked, feathers of the neck elongated, and acuminated at their tips.

Comparing, for the sake of further illustration, our bird with the *Columba Livia*, or common pigeon, it differs in being larger; in having the soft membrane at the base of the bill less tumid and mealy; in having a somewhat longer tail, and shorter, and more lowly feathered tarsi, not to mention the naked space round its eyes, and other diagnostic particulars, which have been separately explained.

The wings are about the same length as in the common species; but owing to the tail being longer than in that species, they have the appearance of being shorter, and they do not reach within two inches of the extremity of the tail.

What further illustration of this species may be needed will be best gathered from a perusal of the details of size and proportions given below, and contrasted with those of the common pigeon. I now proceed to the plumage, in respect to which our bird bears a strong resemblance to the Parabolic pigeon. The principal colour is a dark slaty blue, deepened into more or less perfect black in the quills and tail feathers; and shewing clearest on the lower part of the back, on the lesser tail and wing coverts above, on the thighs, and on the whole of the tail and wing coverts below. Upon the lower part of the hind neck, the upper part of the back, the lesser wing coverts above, and the most part of the body below, the principal colour is almost superseded by a rich purplish tinge; and all the feathers so tinged, save those of the upper back and of the sides of the body, are further adorned by being broadly margined or pointed with pale clear bluish grey. The head and top of the neck are wholly of the softest bluish grey, which colour, as it descends the body, forming in its descent the margins and points just noted, gradually decreases in quantity, and fades in hue. It pre-

vails rather on the lower than upper surface of the neck, and in respect to the body, is no where seen above, except in the shape of some roundish dots of nearly pure white on the lesser wing coverts.

The bill is black, shewing faintly a purplish tinge, which is more clearly visible in the basal membrane of the bill, and on the naked orbits. In front, the legs and feet are black green; elsewhere, they are yellowish. The claws are clear, lively yellow. The iris of the eyes hoary grey or white.

The female is as large almost as the male, from which she differs only in having the bluish grey of the head less clear and pale, and in wanting almost entirely the purplish tinge, which adds so much beauty to certain parts of the plumage of the male, especially the upper part of his back, and the lower part of his belly. This species is, I fancy, questionless new; and as it seems to be peculiar to these mountains, if not to Nèpál proper, *Columba Nipalensis* would be a very appropriate name for it.

Dimensions and weight of the *Columba Livia* and *Columba Nipalensis*.

	C. L.		*C. N.*	
	feet.	*inches.*	*feet.*	*inches.*
Tip of bill to tip of tail,	1	1	1	2¾
Length of bill (to the gape),	0	0 1/5	0	1
Ditto of tail,	0	5	0	6
Ditto of a wing,	0	8¾	0	9
Expanse of wings,	2	0	2	1½
Length of tarsi,	0	1¼	0	1 1/5
Ditto of central toe and nail,	0	1⅝	0	1½
Weight,	11¾ oz.		12½ oz.	

Valley of Nèpál, Dec. 1829.

V.—*Proceedings of the Asiatic Society.*

Wednesday Evening, the 2nd March, 1836.

W. H. Macnaghten, Esq. V. P. in the chair.

Lieut.-Col. J. Colvin, Engineers, Lieut. Col. L. R. Stacy, John Neave, Esq. C. S., Lieut. A. Cunningham, Engineers, and Rája Vijaya Govinda Singha Behadur, proposed at the last meeting, were ballotted for, and duly elected members of the Society.

Read a letter from Mr. Alexander Beattie, withdrawing from the Society.

Read a letter from W. H. Macnaghten, Esq. Secretary to the Government of India, Political Department, acknowledging the receipt of a copy of the communication from His Excellency Prince Esterhazy.

Read the following reply from Government to the Secretary's letter, written in pursuance of the resolution of the last meeting, in regard to

the oriental manuscripts and printed volumes of the Fort William College Library*.

To James Prinsep, Esq.

Genl. Dept. *Secretary to the Asiatic Society.*

Sir,

I am directed to acknowledge the receipt of your letter, dated the 6th instant, and in reply to state, that the Governor of Bengal accepts the offer of the Asiatic Society to provide rooms for the accommodation of, and to hold accessible to the public, the Oriental portion of the late Library of the College of Fort William, and has ordered the books to be made over on the following conditions: The books are to be the property of the Government until the Honorable Court of Directors shall decide whether they shall be made over absolutely or not, the Society to be ruled of course by their decision. The Government to allow the Asiatic Society a monthly sum of 78 Rupees, (stated by the Secretary of the College to be the minimum expence for custody of the books,) in consideration of the Society's providing for establishment and keeping the books clean and in proper repair. All other charges to be provided by the Society. The above allowance to cease, in case of the property in the books being made over to the Society.

Fort William,
the 24th Feb. 1836.

H. T. PRINSEP,
Secy. to Govt.

Resolved, that the Society acquiesce in the terms proposed by the Government, and that the Secretary do take measures for receiving the books and granting receipts for them to the Secretary of the College Council in the course of their daily transfer.

Library.

The following books were presented:

Memoirs of the Astronomical Society, vol. 8th—*by the Society.*

Transactions of the Agricultural and Horticultural Society of Calcutta, vol. 2nd—*by the Society.*

The following by Professor Bopp:

Grammatica Critica Linguae Sanscritae, two editions, 1829, 1832—*by Professor Bopp.*

Glossarium Sanscritum, 1830—by ditto.

Nalus, Maha-bharati Episodium, 1830—by ditto.

Diluvium, cum tribus aliis Maha-bharati praestantissimis Episodiis, 1829—by ditto.

Uber einige Demonstrativstämme und ihren Zusammenhang mit verschiedenen Propositionen und Conjunctionen im Sanskrit und den mit ihm verwandten Sprachen, 1830.

Uber den Einfluss der Pronomina auf die wortbildung im Sanskrit und den mit ihm verwandten Sprachen, 1832—by ditto.

Ardschuna's Reise zu Indra's Himmel, nebst anderen Episoden des Mahabharati—by ditto.

Conjugations System, 1 vol. 12mo. 1816—by ditto.

Die Sundflut, 1 vol. 12mo. 1829—by ditto.

Geological Report of an examination, made in 1834, of the elevated country between the Missouri and Red Rivers, by G. W. Featherstonhaugh, U. S. Geologist, presented by the American Philosophical Society.

The following books were received from the book-sellers:

Bridgewater Treatises, Prout's Chemistry, 1 vol. Kirby on Animals, 2 vols. Roget's Physiology, 2 vols.

Lardner's Cabinet Cyclopedia, England, vol. 5th.

———————————, Greeks and Romans, vol. 2nd.

* The resolution, by inadvertence, was omitted in the printed proceedings. It was to the effect, that as Government had been pleased to transfer the European portion of the College Books to the New Public Library, the Society begged to tender accommodation in its rooms for the Oriental portion of the same, the Government agreeing to pay the establishment necessary for its due preservation while in deposit.

Illustrations of the Botany, &c. of the Himálayan Mountains, and of the Flora of Kashmír, by J. F. Royle, Esq.

Museum of Antiquities, &c.

Facsimiles of inscriptions on two slabs of stone at the entrance of a very ancient Temple, supposed to be Buddhist, on the Hill Fort of Gualior, taken by Mrs. Sale, were forwarded by Major Sutherland, Resident at Gualior.

Extract of a letter from Colonel H. Burney, dated Ava 15th January, announced the transmission viâ Rangoon, of a small box containing some Buddhist images found by Captain Hannay at Tagoung, 100 miles above Ava on the Irawadi.

"Captain Hannay's last letter is dated from Tsen-bo, (the Sembooa of the Map of the Burmese Empire compiled in the Surveyor General's Office in 1825,) three stages above *Baman*. He must have reached Mogoung on the 5th instant. He speaks in the highest terms of the general appearance of the country, and estimates the population, particularly on the right bank of the Irawadi, to be much more numerous than I had imagined. At Baman he was much interested by the Chinese, who were inquisitive but civil; and he estimates the breadth of the Irâwadi at Baman, to be *full two miles* during the rainy season! The *Sherelee* and other rivers falling into it are too inconsiderable to have any connexion with M. Klaproth's Tsan-po.

"I am writing to you in great haste. The cold at Ava this year is unusually great; the thermometer at this moment has fallen to 45°, and I am sitting in an open verandah without a fire, and shivering under a piercing northerly air, which seems to be coming directly from the snowy mountains."

Extract of a letter from W. Ewer, Esq. was read on the subject of the interlined writing on the Lath at Allahabad, which he reported to be in too imperfect a state to be copied or decyphered.

Mr. Ewer reminded the Secretary that he had communicated a drawing of the trident at Barahaut and the inscriptions on it 10 years ago.

A letter from Col. Stacy was received, on the point in dispute of the relative antiquity of the striking of coin in India.

A tabular view of the statistics of Muttra was presented by Captain R. Wroughton, who promised to furnish similar tables of all divisions of the country measured by himself as a part of the grand revenue survey.

An accurate meteorological register, kept in Nipál by Capt. Robinson, for 1835 was received from the Resident at Katmandhu.

A register of the thermometer for the same year, from Mr. Edgeworth at Amballa.

The following models from Nipál were presented by Dr. A. Campbell.

1. Sugar-cane mill, or press, called *Tusa* by the Newars, and *Rulu* by the Parbattiahs.
2. Oil press, called *Chikon-sa*.
3. Water-mill, called *Pan-Chaki* of the northern Doab, and western hills, and *Kau* by the Newars.
4. Spade, called *Koo* by the Newars, *Kodali* by the Parbattiahs.
5. Crutch, called *Kurmughan* by the Newars, used for breaking the clods and pressing the soil.
6. *Roochi-mughan*, used by the Newars to cover sown wheat, and *Gayha*, or upland rice.
7. *Chassu-mughan*, used to smooth the flooded beds, in which the seeds of the *Malsi* and *Toki* is sown, and also prepare the soil for sowing vegetables, pepper (red), ginger, &c.
8. *Roo Retcha*, used for weeding the flooded rice.
9. *Chong Kooki*, used in weeding the *Gayha*, or dry land rice, *coud* (a vetch) or other drill crops.
10. *Rooè*, used for spreading grain to the sun, and collecting it in heaps after its removal from the straw.

11. *Ooghan-Okua*, used for husking grain.
12. *Rooti*, used for making *Chaul* (rice) from *Dhan*, and for pounding bricks.
13. *Chou Rummu*, bhangy.
14. Plough, used by Parbuttiahs.
15. *Keka*, used to separate seeds from the cotton.
16. *Yeau*, spinning wheel.
17. Weaver's loom.
18. *Rool*, carpenter's adze.
19. *Phoko*, used as a saw.
20. *Daha*, carpenter's chisel.
21. Lamp.
22. Tulip.
23. Specimen of *Gapgy* upland rice.
24. Ditto of rice in the valley of Nipál.
25. Ditto of variety of rice called *Malsi*.
26. Two specimens of mustard seeds.
27. Specimen of pea stalactite.
28. Ditto of Nipál soap.
29. Two pen cases and inkstands.
30. Two inkstands.
31. Two *Buddhas*.
32. Nipál sword.
33. Ditto ditto.

Also the following Nipalese Musical Instruments:

1. *Phonga*, (trumpet,) Newarí.
2. *Mohalli*, (flageolet,) ditto.
3. *Singha*, (horn,) Nipál.
4. *Nug Pheni*, or *Turi*, Parbattiah.
5. *Bansuli*, (flute or fife.)
6. *Beli* or *Krishna Beli*, Newarí flute.

Also, several specimens of Cotton and Woollen cloth manufactured at Nipál, Tibet, and Bhoote, marked from No. 18 to 23.

Physical.

The Secretary presented, in the name of Mr. W. Cracroft, a very fine collection of the fossil impressions of vegetables and fossil woods in the coal and shale of Newcastle in New South Wales, just received from that place, along with a number of geological specimens and many rare shells, encrinite, &c.

Mr. C. Betts presented a piece of fossil wood from the sandstone above the coal beds of Burdwan; to which the natives give the name of *Asurhár*, or "giant's bone."

Three specimens of soil, and five of minerals, of Nipál, and a collection of skins of birds, presented by Dr. A. Campbell of Nipál.

A stuffed Albatross, presented by J. Child, Esq. H. C. Pilot Service.

A specimen of *Eurinorynchus Griseus*, or Pigmy Spoonbill, presented by —— Newcombe, Esq.

This bird is one of the rarest in the world; but a single specimen having been found before: the Curator was requested to draw a description of it for publication.

A specimen of *Remora*, presented by C. W. Smith, Esq.

A note on the *Chœrotherium*, one of the new pachydermatous genera, discovered in the Siválik range, by Messrs. Falconer and Cautley, was read.

The letter accompanying it notices the discovery also of the remains of birds, in the same rich fossil field.

Meteorological Register, kept at the Assay Office, Calcutta, for the Month of February, 1836.

Day of the Month.	Observations at 10 A. M.							Observations at 4 P. M.							Register Thermometer Extremes.		Rain.	Wind.			Weather.		
	Standard Barometer, at 32°.	Wet Barometer, at 32°.	Aqs. Ten. deduced.	Thermometer in air.	Diff. or M. T. Depress.	Leslie's Dif. Hygrom.	Hair Hygrometer.	Standard Bar. at 32°.	Wet Bar. at 32°.	Aqs. Ten. deduced.	Thermometer in air.	Diff. or M. T. Depress.	Leslie's Dif. Hygrom.	Hair Hygrometer.	Cold on roof.	Heat in sun.		Morning.	10 A. M.	4 P. M.	Day-light.	10 A. M.	4 P. M.
1	30,034	,272	0,762	71,4	2,7	2,2	96	,899	,026	,873	74,8	5,7	6,0	93	60,1	93,6		e.	sw.	sw.	clear.	hazy.	cumuli.
2	,928	,126	,802	72,8	3,2	3,0	97	,828	,980	,848	74,3	5,9	6,7	89	65,3	90,6		W.	sw.	sw.	rn. mist.	cumuli.	misty.
3	,976	,198	,778	72,0	9,0	9,7	80	,860	,038	,822	73,9	9,7	11,0	74	57,1	86,4		o.	Ne.	ne.	cirri.	fine.	fine.
4	,007	,230	,777	71,7	10,3	11,9	71	,889	,049	,840	74,2	10,9	11,1	68	54,5	88,3		o.	ne.	ne	do	do	do
5	,020	,248	,772	72,0	11,3	13,0	69	,906	,058	,848	74,1	13,8	15,4	64	50,4	87,7		o.	nw.	nw.	hazy.	clear.	clear.
6	,018	,249	,769	71,9	11,0	9,7	81	,896	,048	,848	74,7	12,8	14,0	68	52,3	88,4		o.	nw.	sw.	foggy.	do	do
7	,006			70,3	9,9			,858			77,8	16,0			50,0	88,0		o.	o.	o.	do	do	do
8	,896	,124	,772	72,1	7,3	8,0	87	,764	,898	,866	75,4	12,2	13,8	69	54,0	87,7		o.	nw.	W.	thick fog.	do	fresh breeze.
9	,848	,096	,752	71,6	6,9	7,5	88	,712	,780	,932	77,0	13,0	13,5	72	61,8	91,8		o.	nw.	sw.	clear.	do	fine.
10	,864	,028	,836	74,5	3,7	4,0	94	,778	,846	,932	77,3	6,2	6,9	91	63,0	88,2		S.	sw.	sw.	scud.	cir.cumulus.	cir.hh.sq. nt.
11	,949	,131	,818	73,8	7,8	9,0	81	,806	,890	,916	76,9	7,1	8,4	86	61,3	84,8		SE.	SE.	sc.	cum. cir.	do	fine rn. at nt.
12	,946	,149	,797	73,0	4,8	5,0	93	,806	,948	,858	75,0	5,9	7,0	87	60,8	75,2	1,80	nw.	nw.	W.	cloudy.	cloudy.	nimb.hrn.nt.
13	,880	,118	,762	72,0	4,6	4,0	96	,799	,948	,851	74,7	7,0	6,9	90	58,4	79,2	,20	nw.	sw.	W.	overcast.	cumuli.	cumuli.
14	,958			68,4	4,4			,897			73,2	7,9			60,5	80,4		e.	e.	w.	cirri.	overcast.	cloudy.
15	,946			68,5	7,3			,875			72,0	12,0			57,0	73,4		e.	E.	o.	cir. stratus.	do	do
16	,954			68,7	8,7			,804			75,2	13,0			56,5	76,2		E.	se.	ne.	cir. cumulus.	do	fn.st.rn.at nt.
17	,986	,284	,702	69,1	4,2	3,2	97	,915	,210	,705	69,4	4,5	3,7	96	58,5	67,3		E.	ne.	E.	stormy.	drizzle.	line showery.
18	,010	,316	,694	68,9	3,5	3,3	88	,899	,140	,759	70,6	3,2	3,6	96	58,7	76,8		e.	ne.	ne.	cumuli.	overcast.	cdy. shower.
19	,036	,310	,726	69,7	4,9	4,0	95	,946	,194	,752	70,5	8,2	8,0	82	60,7	75,7		n.	nw.	o.	scud.	stratus.	do
20	,088	,436	,662	67,9	9,3	8,4	79	,010	,264	,746	70,3	10,4	9,7	75	49,2	77,2		o.	nw.	nw.	fog.	fine.	clearing.
21	,099			64,5	7,6			,988			69,8	14,0			50,3	76,8		o.	o.	nw.	clear.	do	fine.
22	,080	,349	,731	70,0	8,0	7,8	83	,936	,164	,772	71,8	9,1	8,2	83	50,0	84,2		o.	ne.	n.	do	clear.	clear.
23	,048	,278	,770	71,3	5,7	4,8	95	,920	,028	,892	75,6	8,6	7,3	89	53,1	84,8		E.	SW.	ne.	do	cumuli.	do
24	,024	,232	,792	72,8	4,0	3,1	97	,918	,056	,862	74,9	10,4	9,3	80	59,3	88,2		o,	SW.	sw.	do	do	do
25	,033	,232	,801	73,0	11,3	11,7	74	,914	,049	,865	75,4	14,0	12,2	69	55,4	85,2		W.	sw.	sw.	do	clear.	do
26	,003	,216	,787	72,5	13,8	12,5	71	,879	,028	,851	74,9	15,7	13,3	66	56,0	83,0		W.	nw.	sw.	do	do	do
27	,969	,196	,773	72,3	13,4	13,0	70	,920	,959	,861	75,4	17,0	15,4	60	55,0	83,8		nw.	nw.	nw.	do	do	do
28	,874			70,8	7,7			,764			77,5	16,6			55,0	84,3		n.	w.	nw.	do	do	do
29	,884	,094	,790	72,8	8,7	8,0	87	,762	,820	,942	77,5	15,0	13,2	75	54,2	91,0		o.	nw.	sw.	do	do	do
Mean,	29,977	29,213	0,766	71,1	7,4	7,2	86	,874	,018	0,845	74,3	10,5	9,7	79	56,5	83,4		variable.			unusually cold—a heavy fall of rain.		

We beg to correct a trifling mistake in our note on Mr. Barrow's horary barometrical observations, published in our last number, The first barometric column contains the actual readings, and are not, as we supposed, corrected for capillarity of tube—this correction is applied along with correction for temperature to the "Bar. at 32°" column: the equation to reduce the observations to our own instrument is correct.

We are now happy to announce the safe arrival of our standard Barometer from England, the duplicate of the Royal Society's instrument. It will in future be registered.